DOCUMENT RESUME

ED 197 210 CE 027 894

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TITLE	Planning for Vocational Education Accessibility. A Local Planning System for Secondary and Postsecondary Programs.
INSTITUTION	Barrier Free Environments, Inc., Raleigh, N.C.: System Sciences, Inc., Chapel Hill, N.C.
SPONS AGENCY	Office of Vocational and Adult Education (ED), Washington, D.C.
PUB DATE	80
CONTRACT	300-78-0592
NOTE	112p.: Photographs will not reproduce well. For related documents see CE 027 895-901.
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Accessibility (for Disabled): *Access to Education: Administrator Guides: Disabilities: *Educational Planning: Equal Education: Guidelines: Mainstreaming: Postsecondary Education: Programed Instructional Materials: Secondary Education: Structural Elements (Construction): *Systems Approach: *Vocational Education

ABSTRACT

This guidebook is the first in a series of eight booklets included in a planning system for improving local secondary and postsecondary program and facility accessibility. The introductory section addresses questions about how to use the materials and when to use the planning system. Other chapters are allocated to each of the five steps in the planning system: (1) identifying barriers, (2) establishing priorities and goals, (3) generating strategies, (4) selecting strategies, and (5) removing barriers. Within each chapter the different techniques available for conducting that step are described and compared. In addition, two continuous examples are developed through each chapter to demonstrate how decisions about each step might be made in typical educational units. The guide also contains a copy of the planning record, the chart, and the barrier removal schedule. Most booklets in the series contain self-study exercises. The other seven (resource documents) are also available through ERIC--see note. (LRA)

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Access to Vocational Education

A Planning System for Local Secondary and Post-Secondary Program and Facility Accessibility

Guide

to the Planning System

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
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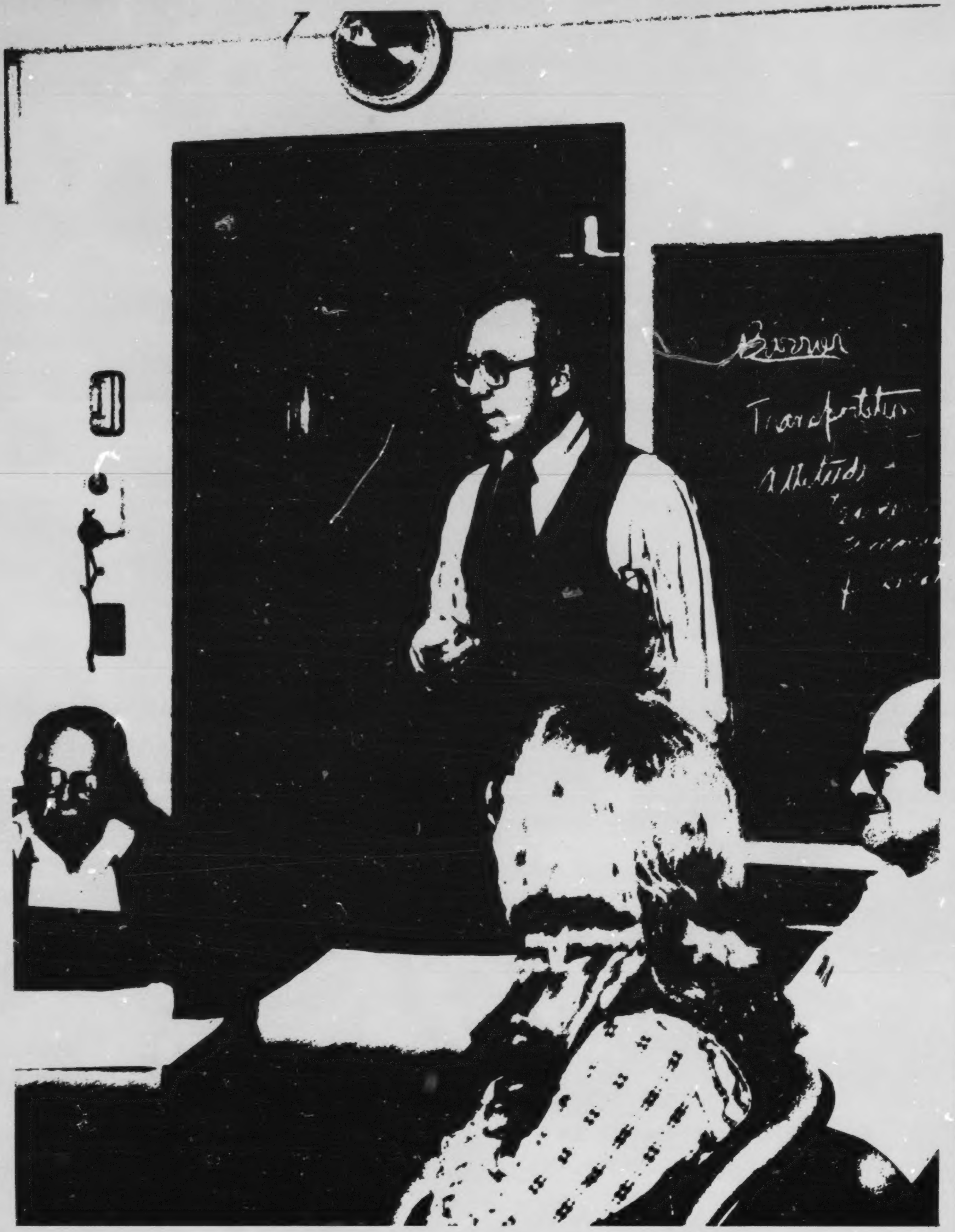
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Transportation
Attitudes

Planning for Vocational Education Accessibility

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A Local Planning System for Secondary and Postsecondary Programs

Developed and disseminated under Contract No. 300780592 for

Office of Vocational and Adult Education
U.S. Department of Education
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PREFACE

There are ethical, economic and legal incentives for insuring vocational program and facility accessibility for all students including those with handicapping conditions. The ethical considerations are rooted in our basic belief in the dignity of each individual. Each individual has the fundamental right to equality of opportunity in order to live a self-fulfilled life and achieve individual potential.

The economic incentives are centered in increasing general productivity of the workforce. All people should have the opportunity to receive training that will permit them to work, to produce goods and services, to earn a meaningful wage, and to pay taxes. Not only will such work provide individual satisfaction, but also it will contribute to the national good by increasing productivity and decreasing the burden of public assistance.

The legal incentives are founded in four Federal laws—The Education Amendments of 1976, P.L. 94-482, the Education of All Handicapped Children Act, P.L. 94-142, the Rehabilitation Act of 1973, P.L. 93-112 as amended, and the Architectural Barriers Act of 1968, P.L. 90-480 as amended. Each law insures the basic rights to appropriate education and training to all individuals, regardless of handicapping condition.

With these incentives in mind, the Office of Vocational and Adult Education of the U.S. Department of Education initiated a series of contracts, each of which was designed to result in a product that would assist educators to respond to these incentives and to improve vocational education services to handicapped students. While Local Education Agencies and State Education Agencies have made considerable progress in mainstreaming handicapped persons in vocational education, additional efforts are needed to further strengthen the coordinated planning of such programs to remove barriers and insure accessible programs and facilities. This particular product has been designed to assist local vocational educators develop accessible programs through systematic planning and through effective removal of attitude, policy, and communication barriers to program and facility accessibility.

Jack A. Wilson
Project Officer
Office of Vocational
and Adult Education
U.S. Department of Education
1980

FORWARD

Our goal in developing these materials was to provide you, the local educational administrator, with a useful tool for improving educational services to handicapped persons. The approach was based upon the assumption that beneficial and effective vocational education programs are administered in informed, efficient and sensitive ways. The materials constitute a systematic approach to planning for program accessibility and are designed to provide for maximum local flexibility and decision-making. We chose to emphasize flexibility in order to make the materials useful for addressing all types of barriers, in order to permit educational units to enter the planning process at whatever point they are in creating accessible programs, and in order to facilitate use of the system in the maximum variety of local situations. As you work through the Planning System, consider carefully how you could adapt the materials to meet specific local needs.

Eric Rice
James H. Hughes
1980

ACKNOWLEDGMENTS

There are a number of persons whose assistance was valuable in developing these materials, both in terms of their support and their thoughtful suggestions. These persons fall into at least three groups: (1) the Technical Advisory Group members who offered counsel and assistance throughout the project; (2) school personnel who participated in the various pilots and field tests of the materials; and (3) consultants and reviewers who offered specific suggestions for materials development.

Below are listed a number of these individuals. We are indebted to them for their assistance. While the value of these materials was enhanced greatly by these people, they share none of the responsibility for any possible difficulties or mistakes in the materials or System.

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AN OPEN LETTER TO SCHOOL SUPERINTENDENTS AND COMMUNITY COLLEGE/TECHNICAL INSTITUTE PRESIDENTS

Dear Educator:

These materials are a useful tool for improving educational services, and particularly vocational education services to handicapped persons. As you consider the potential for using the materials in your educational unit, you no doubt will consider which of your subordinate staff members is best suited for handling this responsibility. As you make this consideration, you should bear three factors in mind: (1) the organizational position of the individual; (2) the skills, qualifications and characteristics of the individual and (3) the need for a way to monitor this individual's work.

In terms of organizational position, use of the Planning System in local education agencies and in community colleges and technical institutes has demonstrated that the person with responsibility for using the materials should be no more than two organizational steps away from the chief executive officer of the educational unit. Often this will mean the Director or Dean of Vocational Education or the Director of Services for handicapped students. Past experience has suggested that when the responsible individual is more than two steps removed from the chief executive position of the institution, too frequently either the Planning System is not perceived to be of high priority within the institution or the System becomes encumbered with the politics of the local institution.

With respect to the qualifications of the person you select for this responsibility, it is important to select someone who has the respect of the staff, students and community; who has leadership skills in working with others; who knows the educational unit's structure and organization very well; and who will be committed to follow through on this task.

With respect to the need to monitor progress in using the Planning System, the products of the different phases of the Planning System—the Planning Record, the Data Chart, and the Barrier Removal Schedule—provide the basic elements of a good monitoring system. If you decide to delegate this task, these three documents can serve as the content for discussion at frequent, periodically scheduled "progress review" meetings. Past use of the Planning System has demonstrated that such meetings not only encourage progress and keep everyone informed about specific project activities, but also reemphasize commitment to use of the Planning System within the educational unit.

We hope you find the materials useful and wish you good speed in your continual effort to improving educational programming.

Eric Rice
Project Director

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Introduction

It is the right of every school-aged citizen of the United States to have provided for them a free and appropriate public education. However, historically, some segments of American society have not enjoyed this educational right because a variety of barriers has prevented their accessing public education and training opportunities, particularly those opportunities that might be most immediately useful to them. This situation has been especially true of secondary and postsecondary level disabled students who have not had access to occupational, vocational and technical skill training programs. As a result, only two-fifths of the mentally and physically disabled adults are employed during a typical year, as compared with three-fourths of all non-disabled adults. Average weekly wages of employed disabled males are 22% lower than those of their non-disabled counterparts (Levitan and Taggard, 1977).

Within training programs, the lack of provision of service is even more obvious. Even though P.L. 94-482, The Education Amendments of 1976, Title II, specifies a set-aside of 10% of the total grant award for handicapped students, disabled students comprise only 2% of the total enrollment in vocational education programs (U.S.O.E., 1978). Further, the Office of Civil Rights continues to process reports of scores of violations, ranging from unthinking to flagrant, that limit access to vocational training programs for handicapped individuals (Federal Register, 1979).

This document is intended to help remedy the lack of equal access which many handicapped students experience. It is designed to help educational administrators identify and remove barriers that limit program or facility accessibility. The particular focus of these materials is vocational education; however, the Planning System is applicable to any educational program.

WHAT IS THIS DOCUMENT ABOUT?

Program administration is defined operationally as the organizational process that deals with the functions of planning and management, each of which involves the complementary tasks of information review/ communication and decision-making. "Planning" is the function that involves gathering and organizing information in order to project what must be accomplished to reach certain goals—in this instance, program and facility accessibility. It involves analyzing the situations and problems, fixing objectives, selecting appropriate solutions, and anticipating future actions. It is a systematic process of (1) identifying the requirements that must be met; (2) determining what is to be done; and (3) deciding how this may be accomplished in an efficient manner. "Management" is the function that involves implementing the plan in order to achieve the intended outcome(s). It involves procuring and arranging possible resources—fiscal, human and information—in a systematic fashion. Management is the "how" of program adminstration while planning is the "what."

These materials are concerned primarily with the planning function. The perspective suggests that program administration should be aggressive, flexible and creative. Management preceded with planning can be characterized as administration that acts to solve or prevent problems rather than administration that merely reacts to problems. This emphasis on planning stems from the knowledge that efficient planning is required for educational programs to be accepted and supported, to realize the desired outcomes, to fit the local situation, and to operate economically. In view of this definition of planning, the following purposes and goals are set forth for this document:

1. To provide educational administrators a systematic way of collecting, processing and structuring information that will facilitate making vocational education programs and facilities accessible to all students.
2. To provide sufficient information to permit a local administrator to select at each step of the Planning System the best technique for their particular institution or school system.
3. To provide educational administrators with all the information and materials needed to use the Planning System in any Local Education Agency or public community college or technical institute.
4. To improve vocational education services to students as a result of administrative planning and management decisions.

WHAT BENEFITS ARE DERIVED FROM USING THE PLANNING SYSTEM?

Benefits from using the Planning System accrue to handicapped students, to the educational unit, to the vocational program, and to personnel of the educational unit. Among the more important benefits that can be derived from using the Planning System are:

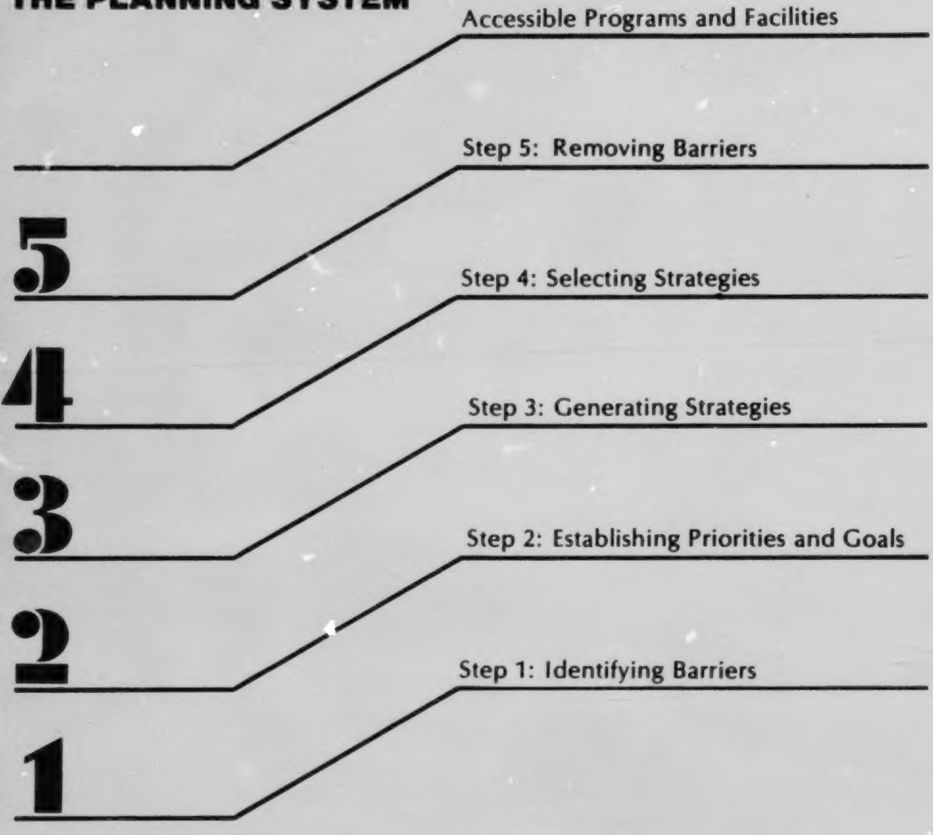
- Better meeting the personal training needs of handicapped individuals by insuring that handicapped students can be involved fully in the program;
- Provision of more effective educational services for all students through careful planning and program development;
- Program acceptance and active support within the community due to citizen involvement on the Local Planning Committee;
- Potential for complying with Federal mandates governing provision of education to handicapped students if the Planning System is used carefully and completely;
- Notoriety in community, state and nation for commmitment and action directed at insuring equality of opportunity in vocational education programming;
- Potential to increase enrollment from service area, through both the publicity that use of Planning System will generate and through opening the program to additional groups of clients; and
- Professional and personal growth of individuals involved in planning process in that the System provides training and experience in using several fundamental administrative planning skills.

The Planning System has been designed with vocational education programming as the central focus. However, the process and techniques suggested have broad applicability in educational planning. The System can be used in other situations if the focus and examples are changed. The skills staff will develop/refine in using the System can be of enduring value in educational administration.

HOW IS THE PLANNING SYSTEM ORGANIZED?

A five-step Planning System, conforming to the General Systems Model of planning (Kaufman, 1972) is proposed in these materials as a way to identify and remove barriers to program and facility accessibility. Figure 1 depicts the five steps in the Planning System. It is recommended that the System be used in the suggested sequence. However, each step has been written and organized so that educational units that have completed some steps through other means can begin at the most appropriate point in the process and use only those steps that are applicable in their situation. The System will fit nicely with most existing systematic planning procedures.

FIGURE 1.
THE PLANNING SYSTEM


Accessible Programs and Facilities
Step 5: Removing Barriers
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2
Step 1: Identifying Barriers
1

Within most steps, multiple planning procedures are offered in order that you, as a local administrator, can match school characteristics and planning technique requirements. Further, the materials have been designed to address all types of barriers in all kinds of educational settings, although special attention has been given to attitude, policy, physical and communication barriers.

The Planning System is written as a series of eight booklets and packaged in a cardboard slipcover. **Only one booklet**, this *Guide to the Planning System*, **must be read in its entirety**; it explains the System, describes the options available to you as a local administrator, requires decisions of you on planning procedures to be used, and directs your activity throughout the planning process. Five of the other booklets, one for each step in the Planning System, are self-instructional texts. Each booklet contains detailed descriptions of the different planning procedures available for that step in the System. In addition, the booklet, *Identifying Barriers*, contains attitude, policy/practice, and architectural survey instruments. The seventh and eighth booklets are supplemental resource guides—one that identifies and briefly describes exemplary programs and practices serving handicapped students in vocational education and one that lists documents and organizations that can be utilized in removing barriers and creating accessible programs.

WHAT IS A BARRIER

In the most general sense, a barrier is any condition which prevents handicapped students from having access to the vocational education activities from which they can profit and that are equal to those available to their non-handicapped peers in the same educational unit.

Merely stating this definition can be confusing. Therefore, the following discussion is intended to explain the terms included in the definition, offer interpretations provided in Federal law and regulations, and note examples of different kinds of barriers.

TERMS

Condition means anything other than an individual's disability and may include environmental features which incapacitate or handicap disabled people. Conditions also may include discriminatory education or job requirements that separate handicapped and non-handicapped students and unfairly exclude handicapped students from programs. Books not in Braille, transportation systems or buildings which are not accessible by wheelchair, public signs and signals such as stoplights, elevator buttons, fire alarm systems which handicapped people cannot use are conditions which are barriers.

Likewise, lack of knowledge and awareness about abilities or disabilities on the part of service providers as well as a lack of knowledge about service programs, or a lack of confidence about using existing training opportunities are conditions that function as barriers to program or facility accessibility.

A handicapped person in vocational education is a person who is mentally retarded; deaf or hard of hearing; learning disabled: speech impaired; visually handicapped; seriously emotionally disturbed; orthopedically handicapped; or other health impaired person . . . who, by reason of the above, requires special education and related services and cannot succeed in the regular vocational education program without special educational assistance; or requires a modified vocational education program. Some agencies and states expand or restrict the definition of handicapping condition to include persons who are chronically ill, multihandicapped, deaf-blind, obese or addicted to drugs or alcohol. Please refer to your state and local policy, as well as to the division within the appropriate Federal agency with which your program is associated to derive the most appropriate definition of handicapping conditions for your local setting.

From which they can profit means that students in vocational education must meet those legitimate and appropriate academic and technical requirements requisite to admission and participation for all students. If handicapped individuals cannot qualify for the program on these grounds, they are no more eligible than non-handicapped students with comparable credentials.

Equal access . . . to non-handicapped peers means that a comparable program must be offered to all students but *not* that all facilities have to be made accessible. The

Attorney General's staff, the Assistant Secretary of the Office of Special Education and Rehabilitative Services and spokespersons for the Council for Exceptional Children all stress the flexibility of the particulars of equal access.

Equal access does *not* necessarily mean that handicapped students must be provided special programs which are not available to the nonhandicapped student in the same school system. It does not mean that all rooms or all buildings must be equipped for handicapped students. Likewise, equal access does not guarantee that the individual will succeed in a given program. It does, however, guarantee an opportunity to try.

KINDS OF BARRIERS

Barriers that affect educational programs can exist within the environment, within society, within the educational system or within the handicapped person. For purposes of this planning document, barriers have been divided into four broad categories, each of which has several components. The categories are additudinal barriers, policy/practice barriers, physical/environmental barriers and communication barriers.

Attitudinal barriers involve the attitudes of people toward disabled people as well as the attitude of handicapped students toward themselves. Attitudes are learned predispositions that consistently influence behavior. Attitudinal barriers are subtle, pervasive and although sometimes difficult to identify, often disappear with increased understanding of disabilities. Attitudinal barriers stem from the belief that disabled people are categorically incapable of doing certain things. Common attitudinal barriers associated with disabled students include:

- lack of knowledge about disabilities and the abilities of disabled students—many nonhandicapped persons lack knowledge and awareness of the needs, problems and capabilities of handicapped persons. As a result, many nonhandicapped persons are inattentive to problems of the disabled and uncomfortable in the presence of handicapped individuals.
- lack of acceptance or negative feelings toward disabled students—handicapped people frequently are perceived as "different" from nonhandicapped people; handicapped people therefore are avoided or simply not treated as ordinary people. Stereotypic, often incorrect, notions about what handicapped students can and cannot do also contribute to negative attitudes toward disabled students. Too often, handicapped students are feared by educators who are concerned that serving handicapped students in regular classrooms will mean extra work, lower educational standards and disrupted classrooms.
- lack of knowledge about the helping system—sometimes handicapped students, their parents or their advocates do not have a thorough understanding of the helping system available to them. Handicapped individuals may not know their rights, may not know that training opportunities exist, or may not know how to locate such information.
- lack of self confidence among handicapped students—many handicapped persons have few role models and fewer positive personal educational experiences to draw upon when building self-esteem. Too often handicapped students may mirror society's assessment of them. As a result, handicapped students may not have any career goals or may have goals that are unrealistic in terms of opportunities or abilities.

Attitudinal barriers related to lack of awareness, lack of knowledge, negative feelings and poor self confidence can be removed. Research findings have indicated that attitudes toward disabled students can be altered through educational programs that combine information and contact or direct experience with disabled students (Simpson, 1976; Hersch, 1977; Higgs, 1975; Donaldson and Martinson, 1977; and Alexander and Strain, 1978). Even simulation of handicapping conditions has proven to be more effective than no information or simply the provision of information.

Policy/practice barriers involve formal and informal school practices that restrict access. They usually result from administrative or management decisions that, often inadvertently, prevent disabled people from receiving the same services as others. They affect people with all types of disabilities and can be difficult to spot because policy/practice barriers frequently are unobtrusive and subtle. Common policy barriers associated with providing vocational education services to handicapped students include:

- restrictive admission policy—too often courses or courses of study include a set of traditional but irrelevant prerequisites for admission. Prerequisites might include completion of prior courses, minimum reading levels, minimum math skills, physical requirements, or formal certification. In many instances, none of these prerequisites may be appropriate to successful completion of the vocational program. The requirements are unrelated to vocational tasks or competencies; instead, they function as the vestiges of tradition or a means for limiting or restricting enrollment.
- Federal, state and local legislation and guidelines—the legislation and guidelines can be confusing. Sometimes funding is not provided; sometimes funding is provided but in too small a quantity or in a categorical fashion that prohibits its effective use; sometimes the information about funding simply has not been made available to local educators. Similarly, multiple competing definitions of handicapping conditions, category of funding or agency responsibilities can impede the provision of services.
- administrative practices—frequently traditional administrative practice may be discriminatory to disabled students. Such practices may include definitions and labeling practices of students, poor identification procedures, inadequate planning and labeling of specific programs as "the handicapped program."
- inappropriate programming—sometimes policy decisions about what is taught, when, and to whom can create a barrier for disabled students. For example, course work may be too narrow and omit training related to living skills, job retention or transferability of skills. Likewise, if vocational programming is not designed to emphasize the abilities rather than the disabilities of handicapped students, it may be a barrier.

Policy/practice barriers can be removed. However, it requires careful examination of policy/practice to identify the specific problem. In addition, barrier removal may require additional work on attitudes since changing organizational and individual practices rooted in tradition is difficult to achieve.

Physical/environmental barriers are related to mobility and manipulation. They involve environmental demands that are basically extraneous to the educational tasks to be performed and which limit participation of disabled persons. These are usually the most obvious barriers to accessibility. Common physical barriers related to provision of vocational education for students with handicapping conditions include:

- architecture—physical access to buildings and classrooms plagues many vocational programs; even those located in new facilities present barriers. Such barriers include heavy doors, difficult hardware, steps and stairs, narrow doors, small turning spaces, uneven surfaces, and high controls.
- site and transportation—site and transportation barriers include buses and vans without lifts, transit stops with curbs, steps and stairs, steep walks and narrow or isolated parking spaces.
- equipment—equipment barriers include controls that are out of reach, that require fine fingering or two hands to operate, or that are placed in locations that physically disabled persons cannot approach. Lack of contrasting colors on parts or controls, or audible signals also may be barriers.

Physical barriers can be removed. They are the easiest barriers to identify but can be expensive to remove. Creative strategies for removing these barriers can greatly reduce potential cost.

Communication barriers arise from problems in acquiring, presenting, and/or processing information. Problems may occur when the student is unable to use standard communication patterns, devices and equipment either because of environmental signals in the training setting that cannot be used or because of an inability to see, hear, speak, write or think clearly. Common communication barriers associated with the provision of vocational education to handicapped students include:

- information presented so that it can be perceived, and subsequently understood, by only one sense—lectures without sign language interpreters, text books without large print or braille versions, and television programs without subtitles are all communication barriers. Likewise, communication barriers also affect people with learning disabilities for whom information delivery rather than information content is the problem.
- information presented at an inappropriate ability level—when disabled students such as mentally retarded students cannot work with materials at a certain level a communication barrier exists. This is a frequent occurrence in courses that rely on traditional texts without supplemental local materials.

Communication barriers, like the other categories of barriers, can be removed. Removal of these barriers may involve use of special equipment or special expertise once the barrier has been identified.

WHICH LAWS RELATE TO THE ISSUE OF BARRIER REMOVAL?

Federal law has established the right of all citizens to equal rights and equal opportunities. This is particularly evident in the provision of vocational education for handicapped students. Four major pieces of Federal legislation with accompanying rules and regulations and subsequent amendments pertain to the provision of vocational education to handicapped students. The laws must be considered in conjunction with each other.

The Education Amendments of 1976, P.L. 94-482. Title II of this law pertains to providing vocational education. Among its purposes is encouraging states to provide services to handicapped students and to assist students to succeed in regular vocational education classes. Selected requirements of P.L. 94-482 that relate to program and facility accessibility for vocational education require that states:

1. Expend a 10% set-aside portion of the basic state grant as a minimum amount of monies spent in programming for vocational education for handicapped students; further, states or local areas must match these funds on a dollar-for-dollar basis;
2. Use funds expended for handicapped students consistent with state's plan submitted under the Education of all Handicapped Children Act, P.L. 94-142;
3. Open the regular vocational program to the maximum extent possible to all students who can profit by using the

set-asides in order to reduce numbers of handicapped students in segregated vocational classes;

4. Establish a local advisory council on vocational education for each LEA or postsecondary institution; insure representation of handicapped persons on national and state advisory councils for vocational education;
5. Conduct local needs assessment to insure that educational programming is kept in line with student needs, student enrollment, and job markets;
6. Describe programs and services to be provided to handicapped students in annual and five year state plans; and
7. Expend some money on improvement of vocational guidance and counseling programs, including those that serve needs of handicapped students.

The Education of All Handicapped Children Act, P.L. 94-142. The purpose of this law is to guarantee a free and appropriate public education for all handicapped students, ages 3 to 21. Selected provisions of the law that apply to vocational education assure that local educational units will:

1. Provide handicapped children with the same variety of program options available to non-handicapped children;
2. Prepare and periodically review a written "individualized education program" (IEP) for each student (implies an inter-disciplinary approach utilizing counselors, vocational teachers and academic teachers, the student's parents, and, where appropriate, the student);
3. Develop plan for serving all students 3 to 21 years of age by September 1, 1980;
4. Develop multi-factored, non-discriminatory assessment and evaluation procedures for determining the appropriate educational program;
5. Serve all handicapped children in the least restrictive environment; insure a continuum of alternative placement to meet the needs of handicapped children for special education and related services including vocational education if it consists of specifically designed instruction, at no cost to the parents, to meet the unique needs of a handicapped child;
6. Provide for parent involvement in all aspects of the handicapped child's education evaluation, program planning and placement;
7. Guarantee students and parents due process rights; and
8. Participate in the creation of a comprehensive system of personnel development in each state, to ensure that in-service training is available to all personnel engaged in the education of handicapped students.

The Rehabilitation Act of 1973, P.L. 93-112, as amended. The purpose of Section 504 of this law is to prohibit discrimination against handicapped people in any public or private program which receives Federal financial assistance. Selected provisions of the law that apply to vocational education assure that all educational agencies receiving Federal assistance will:

1. Provide an appropriate education design to meet individual educational needs of handicapped persons as adequately as the needs of non-handicapped persons are met;
2. Provide that each handicapped person be educated with persons who are not handicapped to the maximum extent appropriate to the needs of the handicapped person;
3. Use an appropriate assessment program to determine needs;
4. Involve handicapped persons or their representatives in the planning processes for achieving program accessibility;
5. Establish regular and open communication (and grievance procedures) so that information on program accessibility will be shared on

an ongoing basis;

6. Always choose option of "most integrated setting appropriate." Separate or different programs are prohibited unless necessary to achieve equal opportunity;
7. Insure accessibility on an institution-by-institution basis;
8. Insure program accessibility that includes but is not limited to a barrier free environment;
9. Provide personal, academic, and vocational counseling, guidance, or placement services on a non-discriminatory basis, and ensure that handicapped persons are counseled toward the least restrictive possible career objective; and
10. Equally train, recruit, promote and compensate handicapped persons.

The Architectural Barriers Act of 1968, P.L. 90-480 as amended. The purpose of this law is to insure that certain buildings financed with Federal funds are so designed and constructed as to be accessible to physically handicapped persons. Selected provisions of the law that apply to vocational education assure that all educational agencies receiving Federal assistance will:

1. Insure that facilities built with or receiving Federal funds since 1969 are free of architectural barriers in compliance with the American National Standards Institute Code, ANSI 117.1;
2. Insure that public transportation and communication are accessible to handicapped persons;
3. Plan renovation or new construction of vocational-technical education facilities in compliance with the current ANSI 117.1 standards; and
4. Acknowledge the enforcement authority of the Architectural and Transportation Barriers Compliance Board.

WHAT IS THE PLANNING SYSTEM?

What Activities Are Involved in the Planning System? The Planning System is a five-step process through which you, as an educational administrator, can make your vocational education programs and facilities accessible to all students. The process permits you (1) to collect systematically information about barriers to accessibility, (2) to devise strategies to remove barriers and (3) to select effective strategies. The process also permits you to structure the information collected in ways that facilitate action for removing the identified barriers. As you use the Planning System your activities will fall naturally into three phases, each of which consists of an activity(ies) and a product. The phases are:

Phase One:
Administrative planning resulting in development of a Planning Record (Appendix A of this booklet),
Phase Two:
Collection of information using procedures noted on the Planning Record and completion of the Data Chart (Appendix B of this booklet), and
Phase Three:
Completion of a Barrier Removal Schedule and removal of barriers (Appendix C of this booklet).

You will develop the Planning Record as you read this *Guide*, consider each step in the Planning System and decide which techniques within each step you want to use. The five steps in the Planning System together with the techniques suggested for use in each step are presented in Fig. 2, Overview of Planning System Techniques.

As you can see, several techniques are presented within most steps of the Planning System. You will tentatively select the technique or procedure for conducting each of these steps that is best suited to your educational situation after you have read the brief description and comparison of techniques provided in the appropriate chapter of the *Guide*. When you have decided upon a

FIGURE 2. OVERVIEW OF PLANNING SYSTEM TECHNIQUES

- STEP 1: IDENTIFYING BARRIERS
  - Survey
  - Delphi Technique
  - Nominal Group Technique
  - Outside Experts
  - Community Impressions
- STEP 2: ESTABLISHING PRIORITIES AND GOALS
  - Modified Nominal Group Technique
- STEP 3: GENERATING STRATEGIES
  - Nominal Group Technique
  - Brainstorming
  - Synectics
  - Charrette
- STEP 4: SELECTING STRATEGIES
  - Decision Matrices
  - Cost Benefit/Cost Effectiveness Analysis
  - Decision Trees
  - Computer Simulation
- STEP 5: REMOVING BARRIERS
  - Force Field Analysis
  - Management by Objectives
  - Program Evaluation and Review Techniques

particular procedure you will note your choice on the Planning Record. Completing the Planning Record will usually require several days of your time and may be the most concentrated effort that you will expend in using the Planning System. You may find some techniques to be applicable for more than one step. For example, Force Field Analysis might be used to identify barriers.

After you have completed the Planning Record for your institution or school district, you will begin the second phase of activity, collecting and deriving information about program and facility accessibility using the procedures indicated on the Planning Record. In phase two, you will complete the first four steps of the Planning System and enter the results on the Data Chart. These tasks, usually conducted on a part-time basis over an extended period, may require three weeks to a year, depending on the procedures you select to collect information, the size of your institution or school district and the number and types of barriers which you identify. Results from each step of the Planning System are used as data to initiate activity in the next step of the Planning System. The product of this second phase of activity is a strategy or set of strategies for removing barriers to accessibility as indicated on the Data Chart.

After you have completed phase two you will undertake the third phase, devising and implementing a Barrier Removal Schedule. This activity is focused on implementing the selected strategy in order to remove the barriers that have been identified through your earlier efforts. This particular set of tasks is specifically addressed in Step 5, the chapter on Removing Barriers which constitutes the final step of the Planning System. A blank copy of the Barrier Removal Schedule constitutes Appendix C of this booklet and will be the final product derived from using the Planning System. When it is finished, the Schedule should contain all the planning information necessary to help bring your particular institution or school district into compliance with Federal regulations regarding accessibility. Further, it should help create a more effective delivery system for providing vocational education to all students including handicapped students.

Who Should be Involved in Planning? Regardless of which techniques you choose in using the Planning System, one or more of the steps will involve group decision-making procedures. Group procedures have several important advantages over individual decision-making in program planning, the most important of which is the number and variety of ideas and solutions a group of people can produce compared to the output of one individual. Group members have different backgrounds and organizational functions and respond to a problem from different perspectives. Further, when several different problems must be considered, a group may be divided into smaller groups to tackle each problem simultaneously, thus reducing the amount of time required for the whole task. Of equal importance, the solutions the group chooses represent a consensus acceptable to all members *if the suggested techniques are followed correctly and fully implemented.*

A second potential advantage which group decision-making holds over individual decision-making is the ability to include "consumer groups" in the process. Students and/or their parents, teachers whose responsibilities will be affected by the decisions made, and potential employers may contribute to the planning. The ultimate success or failure of any accessibility program rests on the cooperation of consumers and implementers. Consensus and support that result from working together represent invaluable assets. Under other circumstances lack of such support could impede an accessibility plan devised by a single administrator acting alone.

A third advantage of using group decision-making procedures is the requirement in applicable Federal regulations specifically requiring that consumers and advisory committees be involved in program planning for handicapped students. Lobbying groups and Federal bureaucrats have recognized that such involvement improves information, generates support for community programs, and develops personal commitment among participants in the group planning and decision-making exercises.

It is recommended that you create a diverse group called a Local Planning Committee (LPC) for undertaking project tasks in order to tap a wide spectrum of opinion and to generate a broad base of support. Membership on the Local Planning Committee should be open to anyone who is interested in the local educational unit, the needs of its students, and the idea of program development. As you read about each technique in each step, keep in mind the groups of professionals and consumers you might select to use the method.

In this document, the group of people involved with planning has been called the Local Planning Committee (LPC). You are welcome to give your committee another name such as the *504 Committee*, the *Access Committee*, *Access Advocates* or whatever you choose for your situation. The Committee should consist of 7 to 15 members. In addition to yourself, the following persons should be considered for committee membership: (1) disabled people or parents of disabled students, (2) the school principal or dean of students, (3) the director or coordinator of special education programs, (4) a representative of vocational rehabilitation services, perhaps a local VR counselor, (5) a representative of the local employment security office, preferably a person who is particularly knowledgeable about employment opportunities for disabled individuals, (6) a member of your local vocational advisory council, (7) two regular vocational education instructors, (8) a special education teacher, (9) guidance counselors, preferably vocational guidance counselors, (10) representatives of community advocacy groups, (11) representatives of the business community, (12) the school architect or building and grounds supervisor, (13) non-disabled students, (14) regular academic teachers, and (15) other persons whom you deem important. It does take more time to involve this range of people, but the outcomes are worth the effort.

How Long Will the Process Take and How Much Will It Cost? Until you begin working through the planning materials it is impossible to estimate precisely how much time and money will be required to utilize the Planning System. Factors that affect time and dollar estimates include the size of the institution or school district, the number and age of facilities, the types of barriers identified, solutions selected for removing barriers, and specific procedures you choose to employ at each step in the barrier removal process. When the Planning System was tested in public schools, community colleges and technical institutes, the range of time and resources required varied from 40 hours of staff time and $200 to 400 hours staff time and approximately $1000.

The time and dollar costs of planning are flexible. You and your staff can determine exactly how much time and money you commit to the planning process. The Planning System has been created so that you can use information already collected to reduce costs; in addition, you can use the materials on a long term, part-time basis in order to distribute costs across a total school year. The choice rests with the local administrator(s).

How Are the Planning System Materials Organized? The Planning System materials are organized as a set of booklets entitled (1) *Guide to the Planning System*, (2) *Step 1:*

Identifying Barriers, (3) *Step 2: Establishing Priorities and Goals*, (4) *Step 3: Generating Strategies*, (5) *Step 4: Selecting Strategies*, (6) *Step 5: Removing Barriers*, (7) *Resource Directory* and (8) *Exemplary Programs and Practices*.

The Guide to the Planning System, the booklet you are now reading, **is the only one that must be read in its entirety**. It explains how to use the Planning System, describes each step in the Planning System, and outlines the choices you must make at each step. The Introduction you are now reading addresses questions you might have about using the materials—the why, what, who, how and when to use the Planning System. This section must be read first since some of the information contained herein is not repeated elsewhere in the materials. Other chapters in the *Guide* are allocated to each of the five steps in the Planning System. Within each chapter the different techniques available for conducting that step are described and compared. In addition, two continuous examples are developed through each chapter to demonstrate how decisions about each step might be made in typical educational units. The *Guide* also contains a copy of the Planning Record, a copy of the Data Chart and a copy of the Barrier Removal Schedule. As you work through the *Guide* you will want to remove the Planning Record from the back of this booklet in order to enter the appropriate information as *you make decisions.*

The other seven booklets included in the Planning System materials are resource documents for you to use as needed. Self-instructional texts in which are discussed the procedures applicable for each step of the Planning System comprise five of the booklets. The other two booklets are supplemental resources for use in removing barriers. You will find the various booklets referenced at appropriate places throughout the chapters of the *Guide*. **You are not expected to read these other seven booklets in their entirety**. Instead, you will be reading selected excerpts within each of the booklets as you make decisions about which procedures you would like to use at each step in the planning process. For example, after you have read Chapter 2 of the *Guide*, Identifying Barriers, you will have considered each of five procedures that could be used for barrier identification. You must determine tentatively which two of the five procedures are most applicable to your setting and enter them on the Planning Record. Next, you will turn to the booklet, *Step 1: Identifying Barriers*, and read the information about those two procedures. Having read the information on those two procedures *only*, you will select the more appropriate procedure. (If neither seems to fit, you may read on.) You will follow a similar procedure for each step in the Planning System.

What Kinds of Preliminary Decisions Have to be Made? There are several preliminary decisions that you must consider before developing your Planning Record. Your decisions about these issues help to determine the outline, the time table, and the resource needs for implementing the Planning System in your particular school setting. These decisions can only be made at the local level and involve three issues: the scope of the effort, the level of resources to be committed, and the target. Specifically, you should consider the following questions:

Scope:
Shall the planning effort be directed at one school or one program (perhaps as a pilot) or shall it be directed at the entire system or institution? There is some rationale to considering a smaller pilot of the process in order to determine the problems to be addressed and the resources that will have to be committed. Likewise, there is reason, such as compliance, to argue for doing the entire job at one time.

Resources:
What resources are available to be committed to this effort? Resources include money, time and energy. Estimates of these items must be made in advance because different procedures require different kinds and amounts of resources. Do not forget the wealth of resources such as volunteer organizations and people within the community that are often untapped by educators.

Target:
What types of barriers and/or handicapping conditions will be

addressed in what order? Have some barriers been identified previously? Where will you begin the planning process? Are there pressing problems in terms of certain handicapped students in providing services that are already known?

What Types of Information Are Available at the Institutional or School District Level? Some information should be available before you begin work with the Planning System including:

- Federal and state legislation and rules and regulations concerning program and facility accessibility. Some information on Federal legislation is included in this *Guide*. State information should be available from your State Department of Education.
- Local policies concerning provision of education services, relations with state and Federal education agencies, and program and facility accessibility. This information should be spelled out in your agency's procedural manual or the community college/technical institute's catalogue.
- An inventory of local community services and resources that might be used by your institution to improve services. Such an inventory should exist or be available from state or regional offices; it should include advocacy groups, consumer groups, public service organizations, community improvement organizations, and important individuals. (Note: The Planning System's Resource Directory includes many national organizations).
- A description of the current level of vocational services provided for handicapped students. The description should include training provided; support services available; job placement success; community support; number of schools, teachers and students involved; and so forth.

The information noted above will assist you at each step of the Planning System.

Using the Planning System

Work on the Planning System will take place in three successive phases, each of which is composed of a process and a product. The phases are:

Phase	Process	Product
Phase One	Administrative Planning	Planning Record
Phase Two	Information Collection/ Processing/Decision-Making	Data Chart
Phase Three	Plan for Barrier Removal	Barrier Removal Schedule

The Planning Record will be the first product resulting from your use of these materials. It is a systematic compilation of the decisions you and the Local Planning Committee make and includes information such as which techniques will be used in each planning step, who is responsible for each activity, and when each step in the Planning Process will be undertaken. The Planning Record, together with the other products—the Data Chart and the Barrier Removal Schedule—are monitoring devices for administrators, the LPC and the public to assess the progress of the accessibility planning project.

DEVELOPMENT OF THE PLANNING RECORD

The Planning Record (PR) constitutes Appendix A of the *Guide*. *Please tear out the PR and begin supplying the information requested in each section.* Most of your activity will be undertaken individually after marshalling resources from the educational unit or the community. However, it is recommended that the Planning Committee be involved whenever possible in developing the Planning Record since the PR becomes the outline for the activities related to Phase Two, collecting information and recording findings on the Data Chart. One specific charge of the Local Planning Committee is assistance in completion of Phase Two tasks. At the least, you must involve the LPC in reviewing and revising a draft of the PR before beginning Phase Two activities.

You should expect that development of the Planning Record may span a six-week period. Rough estimates of how you might distribute your time are as follows:

Item	Estimated Time
Make Preliminary Decisions	About 1 week
Assemble Local Planning Committee	About 1 week
Collect Institutional/District Data	About 1-1/2 weeks
Work Through *Guide* and Complete PR	About 1-1/2 weeks

You will note that the Planning Record is composed of nine sections, each of which includes an identifying Roman numeral, space for recording time use, and an area for providing the requested information. The Roman numeral indicates the suggested order for completing the PR; it also will assist you in marking your place from day to day as you work through the PR. The time use space is intended to help you be aware of the time you are spending on the process of preparing the Planning Record and the overall progress you are making in completing the effort. The information areas should be used for recording decisions and ideas relative to completing Phase One and moving into Phase Two of the Planning System.

General Information, Section I: Examine your copy of the Planning Record and note that it includes nine information sections. Begin your efforts by supplying the information requested in the section entitled, General Information.

Preliminary Decisions, Section II: After completing the General Information section, turn your attention to Section II, Preliminary Decisions. As you will recall, suggested preliminary decisions deal with the following three issues:

1. Scope. How extensive a planning effort will be undertaken? Will it involve all schools or all programs or will it be limited to a subset of the total?
2. Resources. What time, money, personnel and energy resources are available to be committed to the planning for accessibility effort?
3. Target. What types of barriers and/or handicapping conditions will receive attention and in what priority order? At what point will you begin the planning process?

Decisions about each of these issues should be made by the administrative staff and submitted to the School Board or Board of Trustees. The process of making preliminary decisions and recording those decisions with the local board establishes expectations for the planning process, assigns responsibility and authority for the process, and creates a priority for the process within the overall operation of the educational unit. The information section for Preliminary Decisions on the Planning Record is the place where these decisions should be noted.

Local Planning Committee, Section III: After you have made and recorded the preliminary decisions, you must select your Local Planning Committee. Refer to page 13 of the *Guide* and review the types of role occupants recommended for membership on the LPC. Next, working in conjunction with other administrators in your educational unit, you should identify and list persons you believe will make a substantial contribution to your planning effort. After reviewing your list, contact each individual to request their participation and to explain the planning process, LPC duties, and LPC time requirements. After commitments have been secured, send each member a letter confirming membership and announcing the time, place, and agenda of the first meeting. A sample letter is included as Appendix D of the *Guide*.

Background Data, Section IV: Information in Section IV concerns the types of data available in most educational units which will be useful at various points in the Planning System. As you will recall, it was recommended that you collect and review four types of background information:

1. Federal and state legislation, rules and regulations concerning program and facility accessibility.
2. Local policy concerning the provision of vocational education, special education and vocational rehabilitation services and accessibility for all students.
3. An inventory of local community services currently provided to handicapped students, particularly services related to vocational education.

You may need to collect this information from other people in your administrative unit. After you have reviewed the information, enter a brief description of the findings in the appropriate space under the heading of Background Data. You will need to use this information in your initial LPC meeting.

Information Sections V, VI, VII, VIII and IX deal with each of the five steps of the Planning System. You will complete the information requests within each block after you have read sections of the *Guide* and portions of each of the step booklets.

Identifying Barriers, Section V: Section V is concerned with the first step of the Planning System, Identifying Barriers. Turn to the section in the *Guide* beginning on page 25 and read the materials on identifying barriers. As you read the section, match the needs and characteristics of your educational unit to the suggested techniques. When you have completed reading this chapter, enter on the Planning Record the name of the two techniques, in order of preference, that you consider to be most appropriate in your educational setting. Next, turn to the booklet entitled *Step 1: Identifying Barriers* and read the descriptions of each of the two preferred techniques you listed on the PR. Which of the two procedures would seem more appropriate to your situation? Select the more appropriate procedure and enter the name of your choice together with notes on the reasons for the selection in the appropriate place on the Planning Record.

After you have selected the procedure you expect to use to identify barriers, consider how you might implement the technique in your school setting in terms of the following questions:

- When do you propose to conduct the barrier identification process?
- How much time do you estimate it will require?
- What are the steps in the selected barrier identification process?
- Who are the persons you need to involve in the process?
- Who will have what responsibilities in the barrier identification step?

Enter the answers to each question in the appropriate place in Section V of the Planning Record. When you have completed this task, begin work on Step 2: Establishing Priorities and Goals using the following directions.

Establishing Priorities and Goals, Section VI: Information Section VI is concerned with Step 2 of the Planning System, Establishing Priorities and Goals. Turn to the section of the *Guide* beginning on page 39 and read the material. As you will note, this step involves group planning to establish priorities and select among alternative goals. It also involves individual administrator activity to write goals and objectives for the most critical barriers. You will need to read the material in the booklet entitled *Step 2: Establishing Priorities and Goals* to become familiar with the modified Nominal Group Technique, the suggested procedure for establishing priorities and selecting among alternative goals.

As you read the materials in the *Guide* and the Step 2 booklet, consider each of the following questions and write the answers in the appropriate place in the Planning Record:

- Whom will you involve in this activity?
- When will you initiate this activity?
- How long do you estimate it will require?
- What are the steps in conducting this activity?
- Who will have what responsibilities in establishing priorities and goals?

When you have completed this task, begin work on Step 3: Generating Strategies by following the directions described below.

Generating Strategies, Section VII: Information Section VII of the Planning Record is designed to hold all necessary planning information related to Step 3 of the Planning System. You must begin the task of completing Section VII by turning to page 47 of the *Guide* and reading the materials on generating strategies. As you read the section, match the needs and characteristics of your educational unit to the suggested techniques. When you have completed reading this chapter, enter on the Planning Record the name of the two techniques, in order of preference, that you consider to be most appropriate in your educational setting. Next, turn to the booklet entitled *Step 3: Generating Strategies* and read the descriptions of each of the two preferred techniques you listed on the PR. Which of the two procedures would seem more appropriate to your situation? Select the more appropriate procedure and enter the name of your choice together with notes on the reasons for selection in the appropriate place on the Planning Record.

After you have selected the procedure you expect to use to generate strategies, consider how you might implement the technique in your school setting in terms of the following questions:

- When do you propose to conduct the strategy generation process?
- How much time do you estimate it will require?
- What are the steps in the selected strategy generation process?
- Who will have what responsibilities in the strategy generation step?

Enter the answers to each question in the appropriate place in Section VII of the Planning Record. When you have completed this task, begin work on Step 4: Selecting Strategies by following the directions discussed below.

Selecting Strategies, Section VIII: After you have planned for generating strategies, turn your attention to selecting strategies, Section VIII on the Planning Record. Begin your activity by turning to the section in the *Guide* about selecting strategies beginning on page 59 and read the material. As you will notice, the material in this chapter deals with selection criteria, with cost considerations and with techniques for selecting among alternative strategies. After you have read the materials, enter on the Planning Record the name of the two techniques, in order of preference, that you consider to be most appropriate in your educational setting. Next, turn to the booklet entitled *Step 4: Selecting Strategies* and read the descriptions of each of the two preferred techniques you listed on the PR. Which of the two procedures would seem more appropriate to your situation? Select the more appropriate procedure and enter the name of your choice together with notes on the reasons for selection in the appropriate place on the Planning Record.

After you have selected the procedure you expect to use to select strategies, consider how you might implement the technique in your school setting in terms of the following questions:

- When do you propose to conduct the strategy selection process?
- How much time do you estimate it will require?
- What are the steps in the chosen strategy selection process?
- Who are the persons you need to involve in the process?
- Who will have what responsibilities in the strategy selection step?

Enter the answers to each question in the appropriate place in Section VIII of the Planning Record. When you have completed this task, begin work on the next step in the Planning System, Removing Barriers.

Removing Barriers, Section IX: The fifth step in the Planning System is Removing Barriers. Begin your thinking about this step by turning to the section in the *Guide* beginning on page 77 and reading the material. When you have completed your reading, enter the name of the two techniques, in order of preference, that you believe would be most appropriate for completing this step in your educational setting. Next, turn to the booklet entitled *Step 5: Removing Barriers* and read the material on each of the two procedures you listed on the PR. Which of the two techniques would seem to be more suitable for your situation? Select the more appropriate procedure and enter the name of your choice together with notes on the reasons for selection in the appropriate place on the Planning Record. Additional planning for Step 5 will be done in Phase Three of the Planning System.

When you have completed the information section on Removing Barriers, please review your Planning Record to insure that you have furnished all required information. This document will serve as your outline for Phase Two of the Planning System, collecting information and completing the Data Chart.

COMPLETION OF THE DATA CHART

Once the Planning Record is complete, you are ready to initiate activity to collect and process accessibility information using the techniques you have selected. The PR is your outline for Phase Two. It includes the techniques you will use, necessary resources and people to involve, time periods for various tasks, and assignments of responsibilities. Use the PR to guide your activities and assess your progress.

As you complete each step in the Planning System, enter the results or findings in the appropriate place on the Data Chart (DC). The DC constitutes Appendix B of the *Guide* and is the record and product of Phase Two activity. Please turn to the Data Chart and review the document. As you will see, it includes space for recording the time requirements, resource requirements and outcomes of each of the first four steps in the Planning System. The DC will help you keep track of planning progress and will furnish the information necessary to implement Step 5 of the Planning System, Removing Barriers.

CONSTRUCTION OF THE BARRIER REMOVAL SCHEDULE

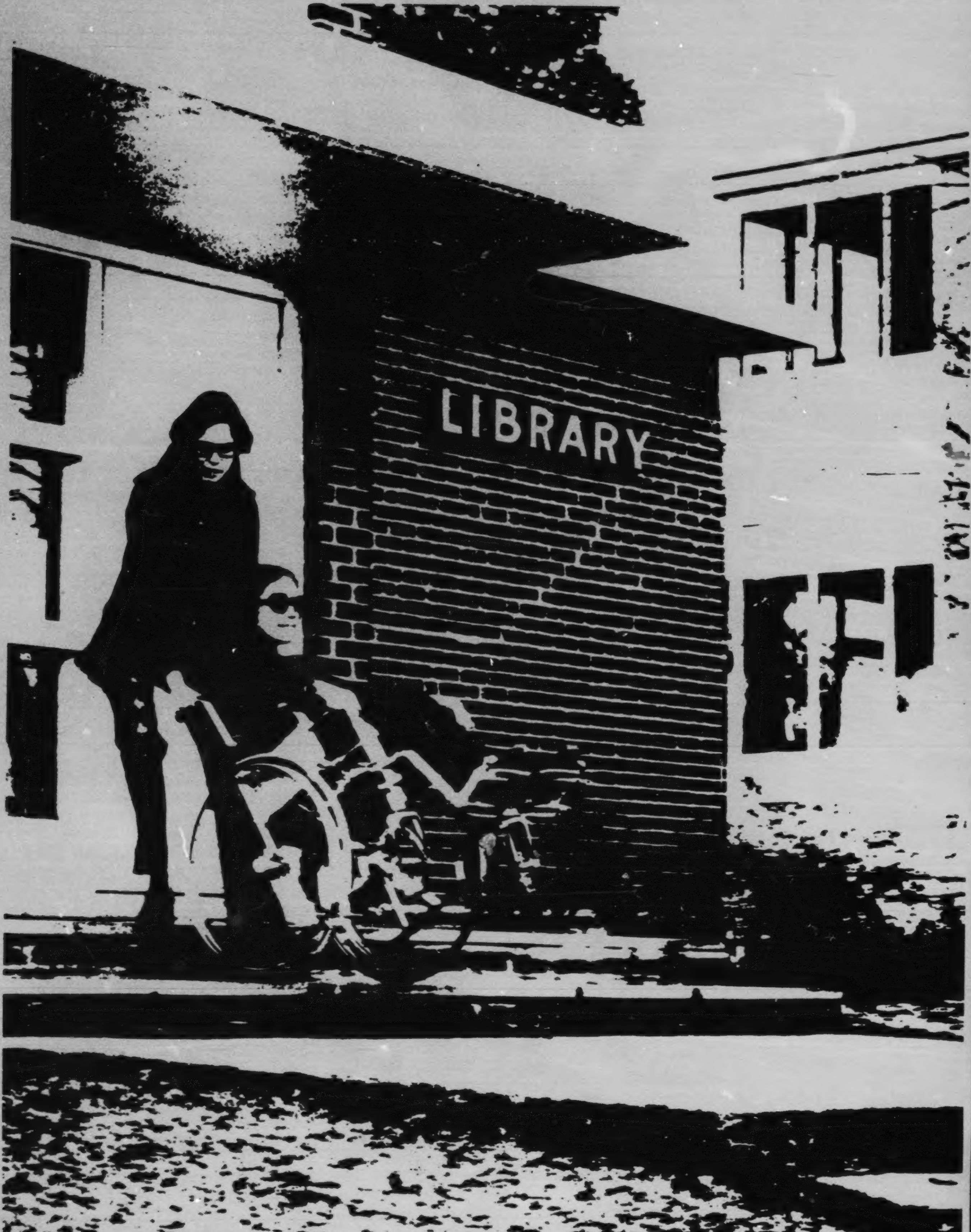
Planning for barrier removal through strategy implementation has a number of positive effects, some of which are more obvious than others. Among the important effects of constructing a Barrier Removal Schedule, especially when the LPC is involved, are (1) a definitive statement of purpose, direction and expectation that clarifies roles, requirements, responsibilities and activities; (2) the collaborative commitment of involved persons to the program; (3) the development of trust between committee members and confidence within individual members with regard to group decisions and individual abilities; (4) individual growth and identity through role development; (5) group rapport including a forum for continuing group communication; and (6) construction of a monitoring instrument to keep track of the progress of strategy implementation.

Turn to Appendix C of the *Guide* and review the Barrier Removal Schedule. As you will note, it provides space for you to record information about the following items:

- Barrier(s)
- Goal(s)
- Objectives
- Strategy(ies)
- Implementation Objectives
- Action Steps for Implementation
- Preceding Activity
- Dates of Activity (Start/End)
- Responsible Staff
- Resource Needs
- Personnel Involved
- Expected Outcomes
- Data Needs
- Involvement of LPC
- Relative Success

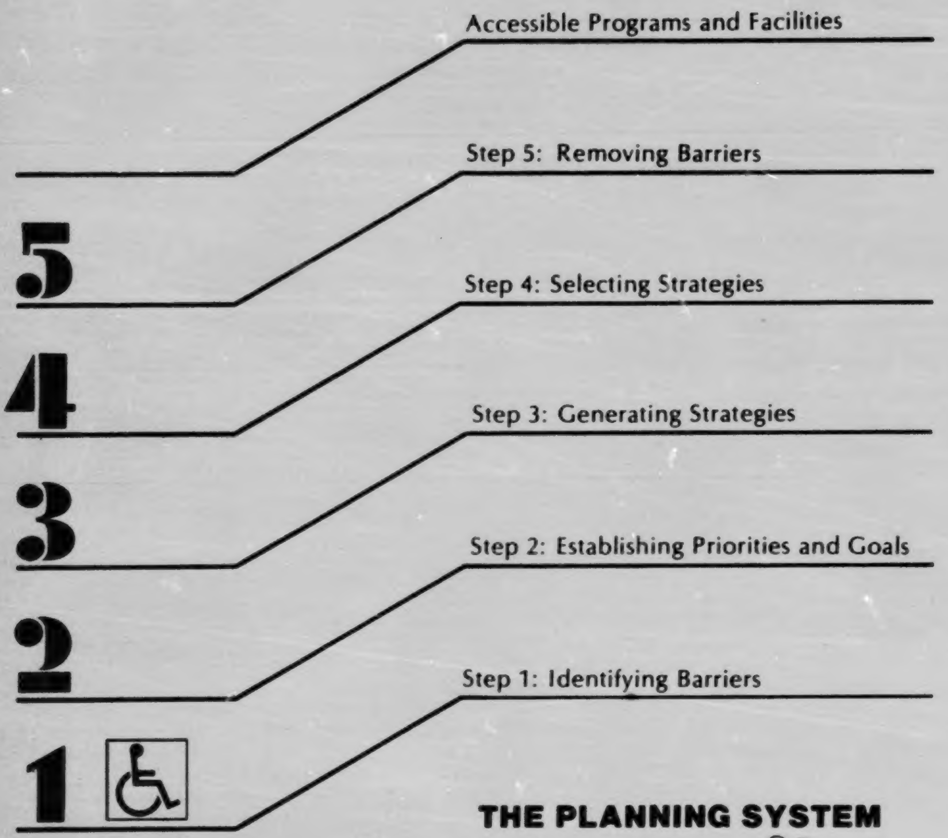
You will construct the Barrier Removal Schedule after you have completed Step 4, Selecting Strategies. At that time, you should review your Planning Record and Data Chart to reexamine outcomes of each preceding step in the Planning System. As you will recall, you will have made some preliminary notes on your Planning Record about the techniques you thought would be applicable to the barrier removal step in your educational unit. You will need to turn to the description of Step 5 in the *Guide* as well as the preferred technique in the Step 5 booklet and scan the materials in light of the outcomes of the four previous steps in your educational unit. Do you still believe the technique you chose is the most appropriate technique? If so, use the technique in conjunction with generating the information called for on the Barrier Removal Schedule. If not, select a more appropriate technique and use the procedure in conjunction with constructing the Barrier Removal Schedule.

You should allow several weeks to complete the Barrier Removal Schedule. When you have finished, you will have a definitive plan for making your program more accessible.


LIBRARY

Step 1: Identifying Barriers

Sometimes, in the desire to improve educational services, there has been a tendency to suggest remedies before the problems were identified and clearly understood. This Planning System proposes a logical set of steps to make program development rational, systematic and effective. The first step toward insuring program and facility accessibility is locating and specifying existing barriers. Information about barriers must be accurate, comprehensive and specific to a particular educational setting. Identified barriers will be the bases of future decision-making related to programming and may determine what types of educational services will be provided to whom and at what cost.


Accessible Programs and Facilities
Step 5: Removing Barriers
5
Step 4: Selecting Strategies
4
Step 3: Generating Strategies
3
Step 2: Establishing Priorities and Goals
2
Step 1: Identifying Barriers
1

There are many kinds of potential barriers to program accessibility, but those emphasized in this planning system fall into four major categories. They are:

1. Attitudes—Attitudinal barriers include not only negative attitudes toward disabled persons but also a general lack of awareness and knowledge about disabled persons, their abilities, and their needs. Included in this category are views of disabled individuals about themselves, of their own conditions and of educational programs. Such barriers often result from lack of knowledge, lack of experience and fear of unfamiliar situations for disabled and non-disabled individuals alike.

Attitudinal Barrier Examples

- fear of people who are "different"
- lack of knowledge and awareness about disabilities and the abilities of disabled people
- lack of awareness of opportunity or lack of self-confidence on the part of the disabled student
- lack of knowledge, skills and experience in working with disabled students
- lack of knowledge about "helping system" available to provide services
- focus on disability rather than ability

2. Policies and Practices—Policy and practice barriers include rules, regulations and traditional ways of behaving which have the effect of preventing disabled persons from receiving the same services as non-disabled persons. Such barriers often result from administrative decisions which though often inadvertent, function to deny equal access to programs.

Policy and Practice Barrier Examples

- lack of adequate planning to provide effective educational programs
- lack of specific role definition regarding provision of services
- inappropriate prerequisites or eligibility requirements for course entry or exit
- systems of categorizing or labeling students
- competing and contradictory regulations for providing educational services for handicapped students
- lack of placement, follow-up and transitional services in training programs

3. Architecture, Transportation and Equipment—Physical barriers include architecture, building site, equipment and transportation conditions that deny or limit access to the program for disabled individuals. Often older schools that were built before codes required that the needs of disabled students be considered in planning have these problems. Unfortunately, some newer facilities may have equipment and building site barriers.

Architecture, Transportation and Equipment Barrier Examples

- steps, stairs, and narrow halls or turning spaces
- parking facilities located great distances from buildings, often separated by steps and steep inclines and containing narrow parking spaces
- equipment with controls that require two hands or great strength to operate, are out of reach, or are located in restricted areas
- shops and classrooms with uneven surfaces or narrow spaces between equipment
- instructional materials and equipment that require two hands to manipulate
- poor lighting, acoustics and inappropriate levels of noise

4. Communications—Communication barriers include difficulties in receiving, sending or processing information. Such barriers often result from a failure to transmit information in more than one way, both auditorily and visually, for example. They also may result from an inappropriate match between individual abilities and required skills to use certain instructional materials.

Communication Barrier Examples

- directions, signs and signals that are presented such that they are received by only one sense
- materials of an inappropriate level of difficulty
- lack of provisions for a handicapped person to transmit responses in more than one way

Barrier identification is a special type of needs assessment that enables you to concentrate your efforts on the most important of the types of barriers discussed above. It enables administrators to collect systematically valid and useful information about the type and extent of barriers which exist in their school system or institution. The suggested procedures assume that useful information can be collected from handicapped students, the community, school staff, experts and consultants, policy statements, blueprints, discipline referrals, attendance records, and other individuals who know the school programs, practices, and facilities.

Five different types of reliable barrier identification procedures have been included in the Planning System. Several different procedures were included to enable you to match the particular characteristics of your institution or school district to one or more of the barrier identification techniques. Such flexibility will (1) permit you to make the important decisions concerning planning for accessibility, (2) allow the Planning System to be adapted to most educational settings, and (3) increase the validity and reliability of your information.

Brief descriptions and comparisons of each of the five recommended barrier identification techniques constitute the remainder of this chapter. As you read the materials, consider your own situation and try to decide which of the techinques would be most useful to you. Later, you will be referred to additional resource materials within the Planning System for a more detailed explanation of the techniques you have chosen for your situation.

AVAILABLE TECHNIQUES

Survey. Surveys or Questionnaires have been used frequently for collecting information of all kinds and are familiar to school personnel and the general public. They have been used in a number of schools to determine barriers to vocational education for the handicapped. Many kinds of questionnaires are available, and the literature abounds with directions for questionnaire construction and discussions of theoretical issues of questionnaire development. Useful types of surveys include mail surveys, telephone surveys and personal interviews. Surveys can be used to collect descriptive or analytic information. More accurate information can be obtained for a smaller investment of time and money from a carefully designed and used Survey than from almost any other information-gathering technique. The Survey can be particularly useful for addressing these potential barriers: attitudes/awareness, policies/practices and architecture.

The Nominal Group Technique. The Nominal Group Technique (NGT) is a structured group meeting involving seven to nine people who follow a prescribed sequence of problem-solving steps to generate a variety of quality ideas about a topic. The Nominal Group Technique is appropriate for (1) identifying elements of a problem, (2) suggesting possible solutions, and (3) establishing a priority listing of these elements. The resulting group decision represents the combined judgments of many individuals.

The Nominal Group Technique is particularly appropriate when support personnel, parent groups, consumers, and professional staff all from different backgrounds and representing different perspectives are to participate in planning. NGT was designed to assure equal participation and effective dialogue among group members so that the planning process is not dominated by a few assertive individuals. The technique has been used successfully to address a number of education problems including the issue of program accessibility. Compared with the other techniques presented here, NGT requires a moderate amount of time and a relatively small expenditure. If your school system is very large—having three or more high schools in which vocational education is offered—it is recommended that you conduct a nominal group meeting at each facility because each school could have different barriers, different staff interaction patterns, and different resources for overcoming barriers.

The Delphi Technique. The Delphi Technique is a method of combining individual *expert* opinions into a collective view which minimizes some of the difficulties inherent in face-to-face meetings. The experts in this context are defined by the planner. Experts may be vocational teachers or supervisors or parents, for example. Users of this procedure carefully design questionnaires to collect and evaluate opinions of knowledgeable respondents who will never physically meet. Participants are interrogated through a sequence of questionnaires mailed over several weeks/months rather than through face-to-face group discussion. Expenditures include time, postage, paper and reproduction costs. Usually, the process is easily understood and is appropriate whenever expert opinion can be elicited. The most difficult time-consuming portion of the technique is creating appropriate response categories on subsequent mailings of the questionnaire. The Delphi has been used for vocational education and special education planning.

Outside Experts and Consultants. Employing Outside Experts or consultants to perform the barrier identification task can be a relatively inexpensive and effective way to get information on barriers. An expert, for this planning purpose, is someone with special experience and knowledge concerning the needs of handicapped persons. One or more consultants representing diverse skills, training and experience might be employed on the same problem. Experts are available from state and Federal agencies and colleges or universities usually at a minimal expense; consultation from private firms is sometimes more expensive. The advantages of using experts for barrier identification are their special knowledge, objectivity, availability and speed. Though some are expensive, the ratio of quality of output to cost is usually high. However, one must be aware that experts *can* have "professional biases" or reflect special interest groups and should be chosen carefully and their advice taken thoughtfully.

Community Impressions. The Community Impressions technique is an open meeting for all members of a designated community. The group may either furnish information or react to some previously collected information about the problem under consideration. The format resembles a "hearing" but is more open and flexible since any person present may express their views. The meeting usually lasts from three to four hours. The most common reason for using Community Impressions is that spontaneous opinions from many people may be obtained quickly. It is important to insure that key people referred to as "key informants" and people representing special populations such as consumers *and* providers of services attend the meeting. The technique is inexpensive and relatively quick; however, the information may be less specific and complete than desired.

COMPARISON AND DISCUSSION OF TECHNIQUES

When should one technique be chosen over another? How do the techniques compare with each other? Suggested techniques vary on five characteristics — kind of information provided, effectiveness, flexibility, complexity and resources required. Consideration of these characteristics will help you to choose the most appropriate technique for your situation. Below is a more complete description of the five characteristics:

1. **Kind of Information.** What information does the administrator have when the technique is completed? Are the data easily understood and used?
2. **Effectiveness.** How effective is the technique? How dependent are the results of the technique on external factors? How valid is the information generated?
3. **Flexibility.** Over what range of educational settings can this technique be applied? Can the method be used in small and large systems?
4. **Complexity.** How complex is the technique? What knowledge and skills are required to use the procedure? Can it be used by both consumers and administrators? How sophisticated must participants be in order to function effectively in the group or to respond to questions?
5. **Resources.** What resources are required to implement the technique in terms of time, cost and equipment? Will consultants be necessary?

The Barrier Identification Techniques Chart, Fig. 3., presents a brief summary of each technique in terms of these five characteristics. As noted in both the figure and the narrative, each technique has some advantage. **The choice of technique is yours to make.** In fact, you may select one technique or perhaps decide to use two or more in combination.

1. Information. All of the suggested procedures can provide valid and reliable information. The Nominal Group Technique and the Delphi Procedure have a built-in process for ranking identified barriers in terms of importance. This can save time in Step 2 of the Planning System. It is possible to rank various barriers using a Survey. Consultants and Outside Experts can rank barriers also if requested to do so by the administrator. The Community Impressions technique generally serves to validate barriers identified by other means or to suggest major areas of concern, and is not suitable for ranking purposes.

The Survey, Nominal Group Technique, Delphi and Community Impressions are useful when you want to involve a number of individuals in your service area or school district. Community Impressions and the Nominal Group Technique provide for direct involvement. Community Impressions creates interest in the project while the Nominal Group Technique and the Delphi have the advantage of creating interest in and public support for the project.

The Survey, Delphi and Nominal Group Technique can yield opinions and ideas that are quantifiable. Surveys have the advantage of generating information in predetermined areas that facilitates comparing opinions from one group of respondents with opinions of other respondents.

2. Effectiveness. Reseach on the effectiveness of each of the five barrier identification techniques is varied. Very little research has been reported on the effectiveness of Community Impressions used in educational settings. Satisfaction with Outside Experts has been associated with how well the administrator believes the consultant's time and expertise were used, how practical the consultant's suggestions appear, and how good the rapport established between the administrator and the consultant was; little has been reported on the validity of consultant's judgment. Surveys have enjoyed wide use; however, their effectiveness has received varied reviews from users and critics because the information is only as good as the original questionnaire. If carefully constructed and analyzed, Surveys can provide valid, reliable and useful information. Studies of the Nominal Group Technique have been highly favorable, but the studies generally have been conducted by those who were involved in developing the technique. The Delphi Technique has received mixed reviews, depending on how it has been applied; as a forecasting device, the Delphi Technique has not fared well but for problem-solving it has been more successful.

3. Flexibility. Most of the techniques described are appropriate in a wide variety of educational settings. Consultants may not be available in some areas, and Community Impressions is appropriate only in certain circumstances. When considering any technique, serious thought should be given to the type of problem being addressed, the amount and kind of information desired and the characteristics of the institution or school district. The Survey or Delphi may be particularly appropriate in large districts while the Nominal Group may be the best technique for smaller districts, single institutions or districts that can be divided to identify barriers.

4. Complexity. Techniques for barrier identification range from low to high complexity. Leadership experience in group process is helpful in using the Nominal Group Technique and the Delphi Technique. The management of consultants, technical assistance groups or a site review team can be demanding, but careful initial contacts and outlining how a consultant will be used tend to reduce the administrative "monitoring role." Surveys and Community Impressions may require more direct administrative involvement. Surveys and the Delphi require data compilation and analysis, while Community Impressions requires a knowledge of constituents, group process and some prior knowledge of barriers.

5. Resources. Estimates of resources necessary to use these techniques are offered with reservations. You are cautioned to scrutinize costs in terms of time, personnel, money, supplies and equipment, with strict consideration of your particular circumstances.

The Community Impressions technique requires the least money, equipment and administrative hours of the five suggested procedures; however, the less valid and reliable results derived from use of this technique may make it less cost effective than the other suggested procedures.

The Nominal Group Technique requires less time, money, supplies and equipment than the Delphi, Survey, or Consultants. The technique also produces valid, reliable and comprehensive information. The major expenditure is time—of participants in the exercise and of the administrator in planning and conducting the meeting.

There is considerable variation in the resources needed to use Consultants because Consultants may cost little, may be obtained "free" or may become quite expensive if extensive travel is involved or if a fee is charged based on hourly or weekly rates. Consultants require no special equipment; however, the process may be slow since the time of key individuals may be difficult to schedule. The cost of local assistance to the Consultant will also vary, depending upon how much time is required to select, monitor and assist consultant activity.

The Delphi costs relatively little money and requires little or no equipment; however, the procedure requires supplies such as paper, reproduction facilities and a mailing budget. More importantly, the Delphi requires staff time to develop each mailing, compile all responses, and analyze the data.

The resources required to conduct a Survey depend on the amount of effort spent developing the instrument, the size of the sample, the data collection techniques and the data analysis procedures; the time needed to construct, administer and analyze the results of the Surveys is expensive; a computer may or may not reduce this cost. However, if prepared questionnaires like those in this Planning System can be adapted to a local situation, Survey costs can be substantially reduced. You must view the subject of costs and resources in terms of the quality of information that will be obtained. Many of these techniques, although described as low in resource requirements, may not give you the results for which you had hoped. Do not make "penny-wise and dollar-foolish" decisions in allocating resources, since future decisions are based upon information derived during this planning step.

FIGURE 3. BARRIER IDENTIFICATION TECHNIQUES CHART

	Survey	Nominal Group
Information	Produces extensive list of barriers from large number of concerned persons. Responses may be averaged, ranked or otherwise manipulated mathematically. Can be used to address any type of barrier if the questionnaire is designed appropriately.	Produces large list of barriers which represents consensus of group. Importance of different barriers also is weighted in terms of rating of importance; this establishes priority of barriers. Technique can be used to address any type of barrier.
Effectiveness	If the questionnaire is carefully designed and presented, the results will accurately reflect feelings & needs. Reliability and vaildity may be estimated. Information is first-hand and procedures can be used to assess progress. Can generate some support among constituents.	Much better than an unstructured group discussion but it may not be precise enough depending on problem. Selection of persons to serve on panels is critical. Structured discussions can be highly beneficial for both information and support.
Flexibility	**High:** Can be short or long, directed to many or few, used to address simple or complex subjects. Can be used in any situation. Assumes respondents can read, or understand verbal instructions.	**High:** Useful in a variety of settings with a variety of problems. Can be used to assess all types of barriers. Assumes respondents can communicate in a group.
Complexity	**Moderate:** Questionnaire construction requires skills, but questionnaires can be borrowed. Interpreting results must be done carefully or with consultation if coordinator lacks experience.	**Moderate to low:** Relatively simple and easy to administer or direct. Must adhere to the rules; must construct problem statement (NGT question) very carefully.
Resources	**Moderate:** Low if you use already developed questionnaire; high if you must hire someone to develop questions. Machine scoring is optional. Hand scoring takes time. Postage and supplies may also be required.	**Low:** Administrative preparation lower than some techniques. Requires time to contact persons, plan meeting and conduct meeting. Required resources include meeting room, flip-pad and time.

Rating System: High, Moderate, Low

	Delphi	Outside Experts	Community Impressions
	Produces list of barriers representing consensus of groups of knowledgeable persons. Importance of different barriers can be weighted. Technique is useful to address all types of barriers.	Produces list of identified barriers from persons who have special knowledge of barriers in this system and other systems. Experts should also interpret their findings.	Produces general list of barriers from informed consumers and providers of services.
	Because technique involves practitioners and experts, list of barriers may be long and varied. Must use local participation in process to arouse interest. Effectiveness depends upon scheduling, persons involved, and director's ability to group and interpret results.	Depends on experts selected; good ones are highly effective. Experts do not generate "grass-roots" support of the program; this lack of participatory decision-making can be a disadvantage. Experts may be unaware of certain critical local peculiarities that must be taken into account.	Depends on selection of data and of participants—this technique's effectiveness is hard to gauge. Information often needs additional specifications to be immediately useful.
	High: Can be used with different kinds of experts and problems. Time required is less flexible than most; must carefully attend to timing in order to insure high return rate and interest.	**High:** Applicable to many settings, to problems from simple to complex, and to various time and dollar constraints.	**Low to Moderate:** To use this method you must have collected some information prior to meeting and be able to generate community interest.
	Moderate to High: Questionnaires require careful wording, attention to the process, conscientious management, and good judgment on catagorizing and merging responses.	**Moderate to Low:** Careful consideration should be given in selecting outside experts. It is not hard to hire someone to solve problems—the tricky part is picking good consultants and using them well.	**Moderate:** Use requires knowledge of what information is available and an ability to organize and run the group meeting. Must also be able to interpret results.
	Low to Moderate: Materials are inexpensive, but there is a moderate time requirement to coordinate questionnaire development, record & group responses and reformulate the questionnaire. No special equipment, but postage and paper are required.	**Variable:** Can range from low to high depending on problem, who's available, area of the country. No special equipment required. Some local time and personnel resources must be available.	**Low:** Use available information and local people. No special equipment or personnel other than room and recorder is required. Must have time to set up, publicize and conduct the meeting.

EXAMPLES FOR CONSIDERATION

The following examples are provided to demonstrate the choice of a barrier identification technique in fairly typical school situations.

Tigris School District: This consolidated school system serves over 75,000 students in 98 schools, one of which is a vocational-technical high school and eight of which are comprehensive high schools that have vocational education programs. The school district serves a metropolitan area of 125 square miles with a population in excess of one-half million. The student population is 42% minority membership, and approximately 38% of the graduating seniors continue their education after high school. The school district serves students from the outlying rural areas of the county as well as the suburbs and the city itself. Even though a mass transportation system operates in the metropolitan area, the school district operates its own bus program which transports approximately 45,000 children per day. The vocational program is extensive. Six thousand of the 18,000 students in grades 10 through 12, are involved in at least one of fourteen available vocational courses of study. The high schools were built between 1948 and 1979; three of the buildings were completed before 1960. Each school contains its own complement of vocational programs.

The "child-count" activities conducted by the Division of Special Education revealed that 6,000 of the 75,000 students served in the Tigris district have some diagnosable disabling condition; this figure includes about 300 students involved in vocational education programming.

The Director of Vocational Education, David Williams, is concerned about providing a quality program for all students and about insuring that the vocational program is in compliance with all Federal guidelines. Unfortunately, because of other constraints, David can spend only about one hour a day of professional time each semester on this problem; a like amount of clerical time is available. A budget line item of approximately $2,000 can be used for planning to address the issue of accessibility during the current school year.

The community includes P.T.A. groups at all schools, two of which are pressing the accessibility question in the high schools; in addition, a local advocacy organization for disabled persons, the Association of Handicapped Citizens, is active in the community. David is not certain where the vocational program for the district stands in terms of being accessible; however, architectural revisions to the high schools, suggested several months ago by the Association of Handicapped Citizens, have been completed. Teachers' contracts specify that no more than two students diagnosed as disabled be enrolled in any classroom at once, without provision of special support services. Enrollment data indicate that the actual class membership patterns vary among high schools and among courses of study. In three high schools, many vocational classes served more than two disabled students; in four high schools, the majority of courses included only two disabled students; in two high schools, including the vocational-technical high school, almost no disabled students were enrolled in vocational education. In one of the high schools with virtually no disabled students enrolled in vocational education, several parents recently had filed grievance procedures concerning the development of IEP's.

In considering the Planning System, David decided that the procedures selected had to (1) involve different groups of community citizens as well as school staff, (2) cost less than $2,000, (3) occupy no more than 100 hours of time per semester of professional and clerical time, (4) determine why some schools and some teachers were serving more handicapped students than other schools and teachers, and (5) be completed within one school year.

In thinking about barrier identification, in terms of the above requirements, David ruled out Community Impressions because he wanted specific barrier information. He eliminated the Nominal Group Technique because conducting it in each of nine high schools would require too much of the available time for only one of the five steps in the Planning System. Consultants were seriously considered but eventually ruled out because each high school would have to be studied separately; that would require too much money. The Delphi also was eliminated. While it was judged to be appropriate for the task, the desire to analyze the data from each high school and from each group of respondents (i.e., teachers, students, parents, etc.) made the Survey the more appropriate way to collect the data.

The Survey was chosen because (1) various groups within the community could be involved, (2) an instrument which could be easily adapted could be used, thus reducing cost, (3) enough time was available, (4) different barriers could be identified in each of the nine schools, and (5) suspected in-school difficulties, particularly staff attitudes, could be probed.

Euphrates Community College (ECC): This suburban institution serves students from a three-county area which includes a metropolitan population of 300,000 people who live in one medium-sized city, two smaller cities, and a variety of smaller towns and communities. ECC, not the only college in the area, serves about 5400 students with a variety of program offerings including 18 different vocational and technical program areas; ECC is noted especially for the successful placement of students from these programs. Vocational and technical programs are housed in the new wing of ECC which was completed in 1974; students must provide their own transportation.

During the last two years enrollment has declined and college administrators have considered mounting a publicity campaign well beyond the course information provided in local high schools. Recent legislation concerning serving handicapped students has prompted officials to notice that the college serves very few handicapped students, and almost none in vocational-technical programs. Further, while the metropolitan area includes several advocacy groups for disabled citizens, no one has approached the college about providing specific services to handicapped individuals. The college has a Section 504 Committee of which the Dean of Vocational-Technical Education, Hannah Markham, is a member. Further, the college has a large counseling office and a learning center for students including those with special learning needs. The 504 Committee has noted that many disabled students use the learning center facility.

Hannah recognizes a need to address the issue of barriers to accessibility but knows that she has only about one-half hour per day per semester to commit to the effort. Further, only $500 to $1000 can be spent on planning how to deal with the problem.

As Hannah considered the Planning System, she decided that the procedure selected had to (1) involve individuals and representative groups from within the community and college, (2) be inexpensive yet provide good information, (3) identify strategies and solutions that would serve more than one purpose, (4) show whether the college was in compliance with the laws and, if not, provide specific information to enable the college to come into compliance, and (5) indicate if the college was satisfactorily meeting community needs.

In thinking about barrier identification Hannah was particularly impressed with the Community Impressions procedure and the Nominal Group Technique. Consultants were ruled out for lack of money and specifics about the problem; she also felt it necessary to include community people to develop support for the college. Surveys, while they were carefully considered, were eliminated because Hannah did not have adequate support personnel. In addition, the Survey might not stimulate lasting involvement and support. The Delphi Technique was considered to be too long and too expensive. The Community Impressions procedure was eventually eliminated because it did not provide specific information and might not necessarily involve all the people she thought should be involved.

The Nominal Group Technique was chosen because it (1) was relatively inexpensive, (2) provided excellent, specific information on a variety of barriers, (3) involved representatives of all important groups in the community and school, and (4) could potentially save time at other points in the planning procedure.

DIRECTIONS

Now that you have read about the available procedures for identifying barriers, please enter in the appropriate place on the Planning Record the names of the two procedures you believe are most applicable to your setting. Next, in the booklet entitled, *Step 1: Identifying Barriers,* turn to the writeups on each of the two procedures you selected and read the materials. As you read the materials on each of the two procedures you have listed, consider carefully the specifics of your local school situation and decide which of the two techniques is more applicable. After you have finished reading both write-ups, turn to your Planning Record and enter the name of the technique you have selected and continue reading in the *Guide* with Step 2: Establishing Priorities and Goals.

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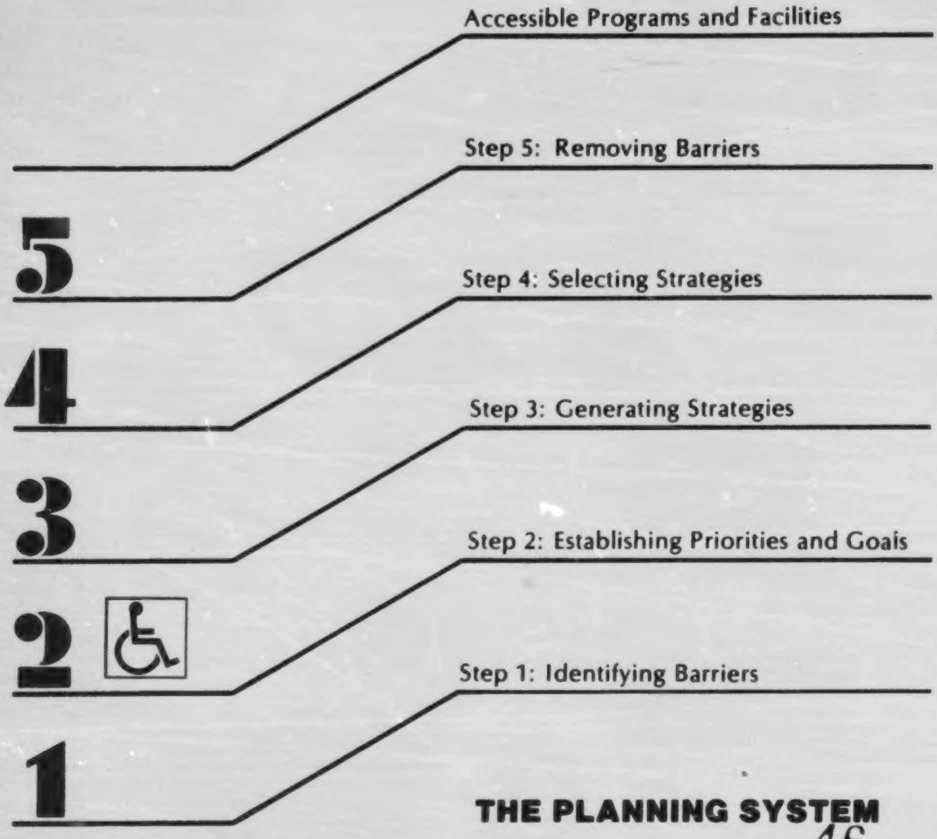
Step 2: Establishing Priorities and Goals

In the second step of the Planning System, you will be rank ordering the barriers identified in Step 1. Once the most important barriers have been listed the Local Planning Committee can be used to transform the identified barriers into appropriate program goals and objectives. Goal statements indicate what you plan to do about eliminating the barrier and are followed by "objectives," more specific suggestions of what action will be taken to eliminate the barrier.


Accessible Programs and Facilities
Step 5: Removing Barriers
5
Step 4: Selecting Strategies
4
Step 3: Generating Strategies
3
Step 2: Establishing Priorities and Goals
2
Step 1: Identifying Barriers
1

The Local Planning Committee (LPC), should be used to establish priorities and set goals for the institution or school district. A Local Planning Committee is particularly important at this stage in the planning process because it provides (1) excellent information and ideas,(2) support for the school's and program's initiatives, (3) additional resources to use in barrier removal and (4) contacts who can assist you in carrying out the program. Involving key school personnel who are responsible for vocational education and handicapped students in early phases of the decision-making increases their interest and investment in the barrier removal process.

The planning technique prescribed for this step is a modified Nominal Group Technique (NGT) conducted with the Local Planning Committee, that group of seven to fifteen people whom you selected as you began the planning process to assist your institution or school district with the accessibility question. If you used the NGT or the Delphi to identify barriers, you already will have ranked the identified barriers and may move on to developing goals and objectives. If you used one of the other barrier identification techniques, you must first rank identified barriers in terms of their importance.

THE PROCESS

Establishing Priorities. Directions for conducting the modified Nominal Group Technique are found in the *Step 2* resource booklet of these materials, *Establishing Priorities and Goals*. The following discussion provides general information about the related process of developing priorities, goals and objectives.

Establishing priorities involves the relative weighting of the different barriers that were specified during the barrier identification procedure. The value of rank ordering the barriers is clear in light of the time and money available to spend on accessibility, given the other requirements of providing educational services to all students. In this way, if you cannot remove every barrier at once, you will know which barriers are of greatest importance to most people. Establishing priorities also is important because it provides a statement for directing staff energy that later can be evaluated. Priorities are particularly well clarified by the modified NGT with a Local Planning Committee.

The Nominal Group Technique was developed from decision conferences and participatory program planning. The modified NGT was selected for this step because it can maximize quality staff and citizen involvement. Another advantage is that members participate equally in the procedures. Nominal Group Technique meetings usually conclude with a perceived sense of closure, accomplishment, and interest in future phases of problem solving.

Setting Goals. Goals are written statements which reflect what is desired and expected to happen as a result of an organization's efforts. In such statements, the target population and its problem are usually identified. Goal statements flow directly from priorities. They are useful for communicating with school personnel because they provide a common ground of understanding to which staff can refer and from which staff can profit in planning, coordinating and implementing services. Goal statements also facilitate communication with the general public because they clearly articulate what your program is about and what you hope to achieve.

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Goal setting may be done by the Local Planning Committee, by the individual administrator or by a combination of the two. It would be quicker and easier in some ways for one person to develop and select goal statements based on the barriers which the planning committee has rank-ordered through the nominal group. Similarly, there are advantages to having the Local Planning Committee do the goal setting and selection. These include developing skills at program planning, making clear to a nucleus of school and community people the objectives of your accessibility efforts, increasing committee support for the program.

Perhaps the best solution is one that combines efforts of the individual administrator and the LPC. Specifically, it is recommended that a local administrator who is skilled or experienced in writing goals derive a set of possible, alternative goals from the rank-ordered list of barriers. After writing this set of goals, the LPC can be convened to select among the possible goal statements.

The Relationship Among Priorities, Goals and Objectives. The major distinction among priorities, goals and objectives is that *priorities* focus attention on a particular issue, *goals* show a general intent and direction with the issue, and *objectives* provide specific intentions with measurable indices and time limits. To develop goals based on the priorities which you have established entails writing at least one goal statement for each of the three to five highest ranked barriers. Then two or more objectives may be specified for each goal statement.

Stating Goals. Goals are related to objectives in that goals are general statements of intent based upon priorities, while objectives are more specific statements that describe anticipated outcomes in a manner that makes them *measurable*. In planning for program accessibility, you should have only a few overall goals with no more than three or four outcome objectives for each goal. In evaluating your efforts, you may assume that a positive evaluation of specific objectives indicates your program is in the process of meeting overall goals.

Writing goals and objectives is easy if you are familiar with the problems and if you have some general structure to follow in constructing your goal statement. Below is a sample structure for a goal statement.

The ______________________ under ______________________
title of the program — whose responsibility

will ______________________ ______________________
action verb — what

______________________ ______________________
for whom—target group — for what general purpose

The following action verbs are examples of verbs that can be used in writing goal statements and that you may find helpful.

Verbs commonly used with goals

- provide
- promote
- increase
- decrease
- enable
- change
- offer
- train

CONTINUING EXAMPLES

Tigris School District. The administrator of the Tigris School District chose to use the Survey technique to identify barriers. Questionnaires were adapted from the materials provided with the Planning System. A sample of students, teachers, administrators, parents and community persons was selected within each school's attendance zone to receive the questionnaire. Responses were compiled and analyzed for each school as well as for the district as a whole.

Barriers identified from the questionnaire results included: (1) lack of student awareness about vocational offerings, (2) lack of parent and consumer awareness about the vocational program, (3) substantial resistance on the part of teachers and administrators in over half of the high schools to enroll or teach handicapped students in regular vocational education classes, (4) ignorance of staff and regular students about the abilities of certain categories of handicapped individuals, (5) registration practices in several schools that decreased the numbers of handicapped students being served in vocational education, (6) apprehension among staff concerning teaching techniques useful in serving handicapped students, (7) some tools and equipment in four shops inoperable by disabled students, and (8) fear among staff that, by serving handicapped students, the vocational program might become a program of lesser quality.

Use of the modified NGT to rank identified barriers resulted in three barriers being regarded as extremely important: (1) resistance by teachers and administrators in over half of the schools to enroll handicapped students in regular vocational education classes because of extra time requirements and unfamiliarity with teaching handicapped students, (2) ignorance of staff and students about the abilities and disabilities of certain groups of handicapped students, and (3) fear that, by serving handicapped students, the vocational program might become a program of lesser quality. From the highest-ranked barrier statement, the following goal statement was developed:

> The Tigris School District Vocational Program under the direction of the Vocational Administrator will increase the number of handicapped students enrolled in regular vocational education classes in order to better serve all students.

Euphrates Community College. The administrator of Euphrates Community College chose to use the Nominal Group Technique because it offered the most advantages in her situation. The 504 Committee, used in conjunction with initiating the Planning System, constituted nominal group membership. The barrier identification meeting lasted over two and a half hours, but produced a list of 25 barriers. The ranking component of the barrier identification technique resulted in the listing according to importance of the five barriers judged to be the most critical by planning committee members. The rank-ordered barriers were: (1) use of prerequisite admission requirements to most vocational courses, (2) lack of a formal mission statement for the college relative to serving all students, regardless of sex, race, creed or handicapping condition, (3) potential discrimination among placement counselors in their efforts to place handicapped students with certain employers, (4) fear of serving handicapped in regular classrooms among certain vocational teachers, and (5) lack of awareness concerning vocational offerings within the college's constituent community. From the highest-ranked barrier statement, the following statement was developed:

> Euphrates Community College under the direction of the Dean of Vocational Technical Education will establish appropriate admission requirements for vocational programs and courses in order to eliminate discriminatory practices.

Review the suggested goal statements pertaining to program accessibility according to the sample structure suggested for writing goals. Each example includes all the elements found in the sample although not necessarily in the same order. The title of the program and/or the specific program component are identified; an action verb is included; what is to be accomplished to what degree and for whom is indicated; and the general purpose is stated.

Specifying Objectives. As noted earlier, objectives are more specific statements of anticipated outcomes. They follow from goal statements and often suggest strategies for accomplishing goals. More importantly, they make achievement of the goal measurable. Below is a sample structure for an objective.

To ______________________ ______________________

action verb — what behavior/attitudes

______________________ ______________________

of whom — with what specific results

______________________.

by when

The following verbs are examples of those which can be used in writing objectives. You and/or your Local Planning Committee may find them helpful.

Verbs commonly used with objectives

prepare
develop
involve
inform
access
stimulate
change
increase
improve
prevent
reduce
decrease

Tigris School District. As you will recall, the goal statement for the most critical barrier for the Tigris School District was,

> The Tigris School District Vocational Program under the direction of the Vocational Administrator will increase the number of handicapped students enrolled in regular vocational education classes in order to better serve all students.

Objectives related to this goal statement included:

1. Improve vocational teacher attitude concerning serving handicapped students in regular vocational education classrooms by 50% during the next school year as measured by pre-test and post-test administrations of a teacher attitude scale.
2. Increase the knowledge of effective teaching techniques among vocational teachers for use with handicapped students in regular classrooms by 50% during the next school year as measured on a test of teacher competencies.
3. Provide vocational education teachers with support resources to assist teachers to serve successfully at least 3 handicapped students in each regular classroom.

Euphrates Community College. At Euphrates, their goal statement for the highest ranked barrier was,

> Euphrates Community College under the direction of the Dean of Vocational Technical Education will establish appropriate admission requirements for vocational programs and courses in order to eliminate discriminatory practices.

The objectives related to this goal statement were:

1. Write and promulgate an open admissions policy for ECC with which 80% of the faculty concur.
2. Eliminate unnecessary prerequisites that may inhibit enrollment of handicapped students in 9 of the 18 vocational program areas during the next school year.

The outcome objectives in the examples given include all of the elements found in the sample structure: (a) an action verb, (b) the behaviors or attitudes that are to be influenced, (c) whose behavior and attitudes are to be influenced, (d) what results are expected, and (e) in what time frame.

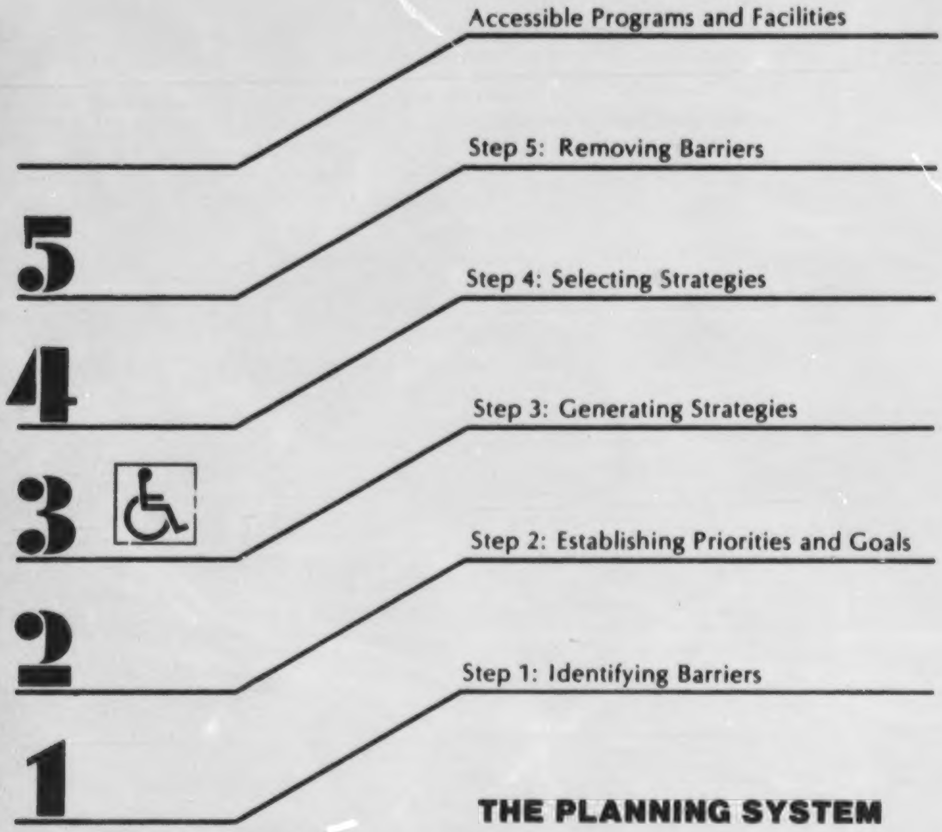
Since objectives often unite goals and strategies, you may need to revise your objectives, based upon the outcomes of planning Step 3: Generating Strategies. You may develop a specific strategy that may be different from the one implied in objectives written in Step 2.

DIRECTIONS

Now that you have read about goals and objectives, please turn to the booklet entitled *Step 2: Establishing Priorities and Goals* and read the materials. After you have finished reading, turn to the Planning Record and enter the appropriate information. After you have completed your notes on the Planning Record, return to the *Guide* and continue your reading with Step 3: Generating Strategies.

Step 3: Generating Strategies

The third step in the Planning System uses group process to develop alternative strategies for removing each of the important identified barriers. A strategy or solution is a course of action undertaken to meet the specified goals or objectives. It is recommended that three strategies be generated for each suggested objective. Remember, the more complete a strategy you can devise using your Local Planning Committee, the more commitment to and support for that strategy you can generate within that group and the people they represent.



Accessible Programs and Facilities
Step 5: Removing Barriers
5
Step 4: Selecting Strategies
4
Step 3: Generating Strategies
3 ♿
Step 2: Establishing Priorities and Goals
2
Step 1: Identifying Barriers
1

Research on using group problem solving techniques in educational settings is sparse while the need for effective planning techniques is acute. Suggested techniques for this step in the Planning System were adapted from a variety of sources other than education. Each suggested technique met three selection criteria: (1) there had to be adequate information available to write a detailed description of the procedure, (2) the technique had to be relatively easy to use, and (3) the method had to be applicable or adaptable to the problem of planning for program accessibility. If a technique was merely a variant of some other technique the selection criteria were used to choose the best variation for inclusion as a possible technique for educational planning.

Four reliable and useful methods of group decision-making are included in the Planning System: Brainstorming, Nominal Group Technique, Synectics and Charrette. Several different procedures were included to enable you to match the particular characteristics of your institution or school district to one or more of the group decision-making techniques. Such flexibility will (1) permit you to make the important decisions concerning planning for accessibility, (2) allow the Planning System to be adapted to most educational settings, and (3) increase the validity and reliability of your information.

Brief descriptions and comparisons of each of the four recommended group decision-making techniques constitute the remainder of this chapter. As you read the materials, consider your own situation and try to decide which of the techniques would be most useful to you. Later, you will be referred to additional resource materials within the Planning System for a more detailed explanation of the techniques you have chosen for your situation.

AVAILABLE TECHNIQUES

Nominal Group Technique. A structured group meeting which follows a prescribed sequence of problem-solving steps, the Nominal Group Technique is designed for a small group (seven to nine members) to generate a variety of quality ideas about a topic. After a silent period of writing down their ideas individually, the group leader asks each participant to share one idea at a time in a "round robin" fashion which the leader records on a flip chart; several rounds may be required for all ideas to be shared. A discussion period for clarifying, combining, and eliminating ideas follows. Then each member is asked by the leader to select and rank privately the five or ten most important items remaining on the list. The tallied rankings represent a consensus of the group about what are the best alternatives discussed. The Nominal Group Technique is versatile in the kind of settings and problems with which it can be used successfully. It will require about two hours for members and a day for the leader.

Brainstorming. Eight to 15 persons called together to generate as many ideas as possible about a particular problem during a very short period of time is called a Brainstorming group. During the initial period of idea generating, no member is allowed to criticize the proposals of another member. This rule is enforced by the leader who usually calls the meeting together and keeps it going by trying to keep the ideas coming as fast as possible from the group. After the session the group may revise, combine and rank order various ideas or solutions. The idea generating session lasts a maximum of a half hour; introductory and follow-up activities may increase the time to a half day for participants and even longer for the group leader.

Synectics. The technique of Synectics involves the use of metaphor, simile and analogy in a "group process of free association" to generate novel solutions to problems. Synectics groups have five to seven members and meet continuously for several hours to several days. The leader is responsible for stimulating the creative process using the following mechanisms: (1) *personal analogy,* putting oneself in the problem situation as a central element (even an inanimate object), (2) *direct analogy,* looking for similar problems in other contexts and noting solutions already devised there, (3) *symbolic analogy,* an esthetically satisfying though technically inaccurate image which incorporates a compressed description of the elements of the problem. Synectics leaders may require some training but training centers and materials are available. The products of Synectics groups are most unique and highly successful, particularly in industrial settings where the method was first developed. It requires more time than do the other suggested procedures.

Charrette. The Charrette is an activity that brings community members and experts together for a limited time period to suggest solutions to a specific problem. It is particularly applicable when a need exists for those directly and indirectly involved with the program to contribute to the planning process by defining what they want their experience in the program to be like. Effective use of Charrette requires careful planning that insures that background information is ready, logistics are arranged and that all necessary community persons will attend. The actual activity involves an introduction of background information and expectations, a discussion session to work on identification of goals, small group work on specific problems or parts of problems, and a jury or panel who reacts to proposals generated by small groups. The technique can require from one to several days, depending on the problems to be addressed.

COMPARISON AND DISCUSSION OF TECHNIQUES

When should one technique be chosen over another? How do the techniques compare with each other? In fact, the techniques vary on five characteristics—kind of information provided, effectiveness, flexibility, complexity and resources required. Consideration of these characteristics will permit you to choose the most appropriate technique for your situation. Below is a more complete description of the five characteristics:

1. **Kind of Information.** What information does the administrator have when the technique is completed? Are the data easily understood and used?

2. **Effectiveness.** How effective is the technique? How dependent are the results of the technique on external factors? How valid is the information generated?

3. **Flexibility.** Over what range of educational settings can this technique be applied? Can the method be used in small and large systems?

4. **Complexity.** How complex is the technique? What knowledge and skills are required to use the procedure? Can it be used by both consumers and administrators? How sophisticated must participants be in order to function effectively in the group or to respond to questions?

5. **Resources.** What resources are required to implement the technique in terms of time, cost and equipment? Will additional consultants be necessary?

The Strategy Generation Techniques Chart, Fig. 4., presents a brief summary of each technique in terms of these five characteristics. In it, each of the techniques mentioned is listed horizontally and the characteristics, vertically. In each block of the table are found evaluations of one characteristic of each technique. Discussion of the table which follows will proceed *by characteristic.* All techniques will be examined and compared in terms of each characteristic. As noted in both the figure and the narrative, each technique has some advantage. *The choice of technique is yours to make.* You may, in practice, decide to use a combination of techniques.

1. **Information.** All of the suggested procedures can provide valid and reliable information although the kind of information obtained from each technique will be slightly different. Brainstorming and Nominal Group produce a rank-ordered list of solutions while Charrette may produce a variety of useful ideas or strategies. Completely integrated planning models for bringing about change is the end product of Synectics, including a time frame and identification of persons to coordinate different phases of the implementation. Charrette, Nominal Group and Synectics include feedback and discussion among group members which tend to generate support of the program developed by the group.

2. **Effectiveness.** Effectiveness or "how good is the method" may be the most critical concern. Brainstorming produces some highly novel solutions but is very dependent upon how well the group is directed and the influence of different members of the group. Nominal Group is efficient and effective when used to explore problems as well as to generate solutions. When using Synectics, one uniform solution is obtained, but its effectiveness

depends on the ability of all group members to use the technique. With Charrette, the effectiveness is dependent upon the ability of the leader and upon the presence and participation of a wide variety of community people. If used correctly, Charrette, like the other suggested techniques, can be used to produce viable solutions as well as to generate group support and consensus.

Research on the effectiveness of the techniques has been variable. Very little research has been done on Synectics and Charrette, so only the recommendations of pleased users are available. Much more research has been done on the remaining two techniques. Brainstorming consistently has been found to be less effective than other group methods unless used to its logical conclusion, including follow-up. Most of the studies of the Nominal Group Technique report favorable results, but most of the studies have been done by those individuals who developed the technique.

3. Flexibility. The flexibility of each technique, its ability to be used over a wide range of educational settings, varies greatly. Three techniques, Brainstorming, Charrette and Nominal Group, are quite general and would be appropriate for a wide range of settings. Synectics is suited to more complicated problems, though it has less often been used in educational settings and may be less appropriate to problems involving human variables. As you think about flexibility, consider the complexity of the problem; there is no need to select a procedure that is more complicated than the problem requires.

4. Complexity. The techniques range from fairly simple to very complex. With Brainstorming, Charrette and Nominal Group, anyone who is familiar with the problem under consideration can effectively participate in the group process. Brainstorming relies on natural leadership, though experience in directing groups would be helpful; managing a Nominal Group or the Charrette is more demanding but becomes easier with practice.

Synectics and to some degree Charrette are much more complex. To participate or direct a Synectics group requires skills in using analogy, simile and metaphor; this may necessitate a course in the technique or experience using it. Charrette requires skills in group management. Since the skills developed by the two more complex methods may be applied to other problems, the extra time and effort may be justified, however.

5. Resources Required. When examining resources, Nominal Group and Brainstorming appear relatively inexpensive as compared to Synectics or Charrette. This is true for less complicated problems. However, if the particular problem is very complicated, Brainstorming or the Nominal Group could require a number of interactions—many hours, days or weeks—and the group still might not formulate any viable solutions. Synectics and Charrette may be quite inexpensive if training courses or consultants are readily available. In such instances, resource requirements may be highly similar. As you consider resources and costs remember that the quality of the product, in education as elsewhere, is directly proportional to the resources, especially time, allotted.

In summary, a range of techniques has been presented in the Planning System because variety exists among the local education situations in which these techniques will be applied. The technique you select for generating alternative solutions for removing barriers to vocational education for the handicapped depends in large measure on local variables and how far the system or school has moved toward its goals in this area.

FIGURE 4.
STRATEGY GENERATION TECHNIQUES CHART

Characteristics	Brainstorming
Information	Produces rank-ordered list of novel ideas.
Effectiveness	Better than unstructured group; research says not as good as other techniques.
Flexibility	**High:** Can be used with any number of problems and in any setting.
Complexity	**Low:** Must only be familiar with the problem.
Resources **a) Person Hours**	**Low:** 2-3 hrs/person plus additional leader time.
b) Funds	Minimal.
c) Equipment	Room and chairs; chart.

Rating System: High-Moderate-Low

	Nominal Group	Synectics	Charrette
	Produces rank-ordered list of alternatives which represents group consensus.	Produces one highly novel & integrated solution, testable working model.	Produces one or more solutions to a specific problem.
	Much research finds it effective; too structured for some problems or groups.	Very productive but little research has been reported on the technique's effectiveness.	Little research available on effectiveness, especially when applied to education program problems.
	High: Can be used with any number of problems and in any setting.	**Moderate:** Is most applicable with concrete problems.	**High:** Can be used with any number of problems in most settings.
	Moderate: Requires good initial question.	**Moderate to High:** Participants must be able to use analogies	**Moderate:** Must insure adequate representation of various viewpoints: requires skills in managing group dynamics.
	Moderate to Low: 3-4 hrs/person plus additional leader time.	**High:** 20+ hrs/person. Outside experts; training program for leaders.	**Moderate:** 10-20 hrs/person plus additional leader time. Outside experts.
	Minimal.	Moderate to High.	Minimal.
	Room and chairs; flip chart and other supplies.	Meeting room.	Room and chairs; paper and pencils; charts; arrangements for meals, if necessary.

EXAMPLES FOR CONSIDERATION

Tigris School District. As you will recall, the vocational administrator of the Tigris School District, David Williams, decided to select planning procedures that would conform with the criteria of: (1) cost less than $2,000, (2) involve many community groups, (3) require no more than 100 hours each of administrative and clerical time per semester, and (4) permit the district to respond to differences between high schools.

Williams used the Survey technique to identify barriers and the modified Nominal Group Technique to rank order the identified barriers. The most important barriers were (1) resistance by teachers and administrators in over half of the schools to enroll handicapped students in regular vocational classes due to concerns about the extra time it would require and their unfamiliarity with serving disabled students; (2) ignorance of staff and students about the abilities and disabilities of certain groups or categories of handicapped or disabled students; and (3) fear that, by serving handicapped students, the vocational program might become a program of lesser quality.

The highest ranked barrier statement, resistance to serving handicapped students in regular classrooms, was chosen for immediate attention. As you will recall, the goal statement for the most critical barrier for the Tigris School District was,

> The Tigris School District Vocational Program under the direction of the Vocational Administrator will increase the number of handicapped students enrolled in regular vocational education classes in order to better serve all students.

Objectives related to this goal statement included:

1. Improve vocational teacher attitude concerning serving handicapped students in regular vocational education classrooms by 50% during the next school year as measured by pre-test and post-test administrations of a teacher attitude scale.
2. Increase the knowledge of effective teaching techniques among vocational teachers for use with handicapped students in regular classrooms by 50% during the next school year as measured on a test of teacher competencies.
3. Provide vocational education teachers with support resources to assist teachers to serve successfully at least 3 handicapped students in each regular classroom.

Given this background, as Williams considered the procedures for strategy generation, he eliminated all but Brainstorming and Charrette. He perceived that these techniques met each of the specified selection criteria and were usable with the suggested goal and objectives. As he read the planning materials on Brainstorming and Charrette, he ultimately chose Brainstorming because he felt it might be slightly easier to use, given his desire to generate potentially different solutions for each of the three high schools in which resistance to serving handicapped students had been noted. Two of the three high schools of concern were comprehensive high schools while the third was a vocational-technical school. The vocational program offerings in these three high schools included practical nursing, food services, agriculture, typing, business-data processing, upholstering, metalworking, refrigeration, auto mechanics, consumer home economics, and clothing and textiles.

Ultimately, Williams decided on holding a Brainstorming session in each of the three schools in which particular problems had been noted on the Survey. He would follow up these Brainstorming sessions with a Brainstorming session utilizing the Local Planning Committee and the data from each of the three local school strategy sessions. The intention was to create through the Local Planning Committee Brainstorming session several general strategies that could be used in the school system to address the specified goal and objectives, and to provide for school level input and differences as well.

During the course of two months Williams set about holding four Brainstorming sessions. He was somewhat disappointed with the sessions in each of the three high schools but his Local Planning Committee Brainstorming session proved to be very successful. The LPC spent two hours of that session generating their own ideas about how the goal of increasing enrollment of handicapped students in regular vocational classes could be met, particularly in terms of the third suggested objective. During the last hour the LPC attempted to incorporate their ideas with those generated during the three earlier Brainstorming sessions. As a final product, the Local Planning Committee produced a list of strategies for Williams and other school officials to consider as ways for meeting the objective. The list of strategies suggested by the LPC were the following.

1. The establishment and maintenance of a volunteer program of parents and representatives of community groups to work in the schools on a regular basis with vocational teachers to provide time and assistance in helping teachers work with handicapped students in regular classrooms.

2. Creation of an extensive in-service program for all regular vocational education teachers. It was suggested that this program be a five-day course to be held throughout the school year. Work sessions should include (a) field trips to institutions that primarily serve disabled students, (b) role plays that place teachers in the position of parents or individuals with disabilities, , (c) films and materials related to particular abilities or disabilities of certain groups of handicapped students and (d) exposure to handicapped individuals, including students who are now working or enrolled in local postsecondary vocational programs.

3. Initiation of an instructional aide program with the vocational educational curriculum. This instructional aide program would provide an aide to each regular vocational education teacher. The aide's chief responsibility would be providing related academic support services for handicapped students. They also would assist non-handicapped students.

4. Development of a resource teacher program. A resource room in each target high school would house instructional materials and be staffed by a teacher trained in providing special education and related services. The teacher would be available to work with individual handicapped students enrolled in vocational education classes and to provide technical assistance and consultation to individual vocational education teachers.

These four strategies were the suggested alternatives among which Williams would have to select in the next step of the Planning System, Selecting Strategies.

Euphrates Community College. As you will recall, the selection criteria for choosing among procedures in the Planning System for Hannah Markham, the Dean of Vocational Education at ECC, were that the selected techniques had to (1) involve representatives from groups within the community and college, (2) be inexpensive, (3) serve more than one purpose, (4) help bring the college into compliance with the law, and (5) help indicate if the college was satisfactorily meeting community needs. Markham chose the Nominal Group Technique to identify barriers and establish an importance ranking for those barriers. The most important rank-ordered barriers were (1) the use of prerequisite admission requirements to most vocational courses, (2) the lack of a formal mission statement for the college relative to serving all students regardless of sex, race, creed or handicapping condition, and (3) potential discrimination among placement counselors in their efforts to place handicapped students with certain employers. The goal statement developed by the 504 Committee, using the critical barrier was:

> Euphrates Community College, under the direction of the Dean of Vocational-Technical Education will establish appropriate admission requirements for vocational programs and courses in order to eliminate discriminatory practices.

The objectives related to this goal statement were:

1. Write and promulgate an open admissions policy for ECC with which 80% of the faculty concur.
2. Eliminate unnecessary prerequisites that may inhibit enrollment of handicapped students in 9 of the 18 vocational program areas during the next school year.

As Markham considered the possible group decision-making procedures for generating strategies for removing the specified barriers, she was favorably impressed with Charrette, the Nominal Group Technique and Synectics. She felt that Brainstorming might not provide the type of information that she needed, particularly not in regard to policy suggestions. Next Markham eliminated the Nominal Group Technique. While she had used this technique productively in the earlier steps of the Planning System, she decided that the 504 Committee would appreciate a change in this step of the Planning System. She felt that both Charrette and Synectics were excellent strategies for her particular problem. She favored Synectics because it results in a single highly novel integrated solution for the policy problem but was concerned about the time required to become technically proficient in using the technique. Ultimately, she chose Charrette because it was relatively simple, yet had potential for involving the community and suggesting any number of workable strategies and, if managed correctly, generating group support and consensus on those strategies that were most important. The Charrette used with her 504 Committee resulted in the following set of suggested strategies for further consideration.

1. Eliminate from the catalog, brochures and other course related materials all referenced attitude and experience prerequisites such as previous courses and specific skills, except those that instructors can demonstrate, in competency terms, are necessary for entry level into the course.

2. Develop and publicize a mission statement for ECC during the first two months of the school year using the 504 Committee and the Faculty Committee. This mission statement would serve as school policy related to providing education to all students regardless of sex, race, creed, or handicap.

3. Analyze the reading levels of text and instructional materials in nine of the 18 vocational program areas using the *Fry* reading test. This analysis would permit ECC to determine what, if any, reading skill levels are

required as prerequisite for enrollment in those particular courses and to make appropriate modifications.

Strategies number 1 and 3 were addressed to objective two, elimination of unnecessary prerequisites. Strategy number 2 was addressed to objective number one, an open admissions policy.

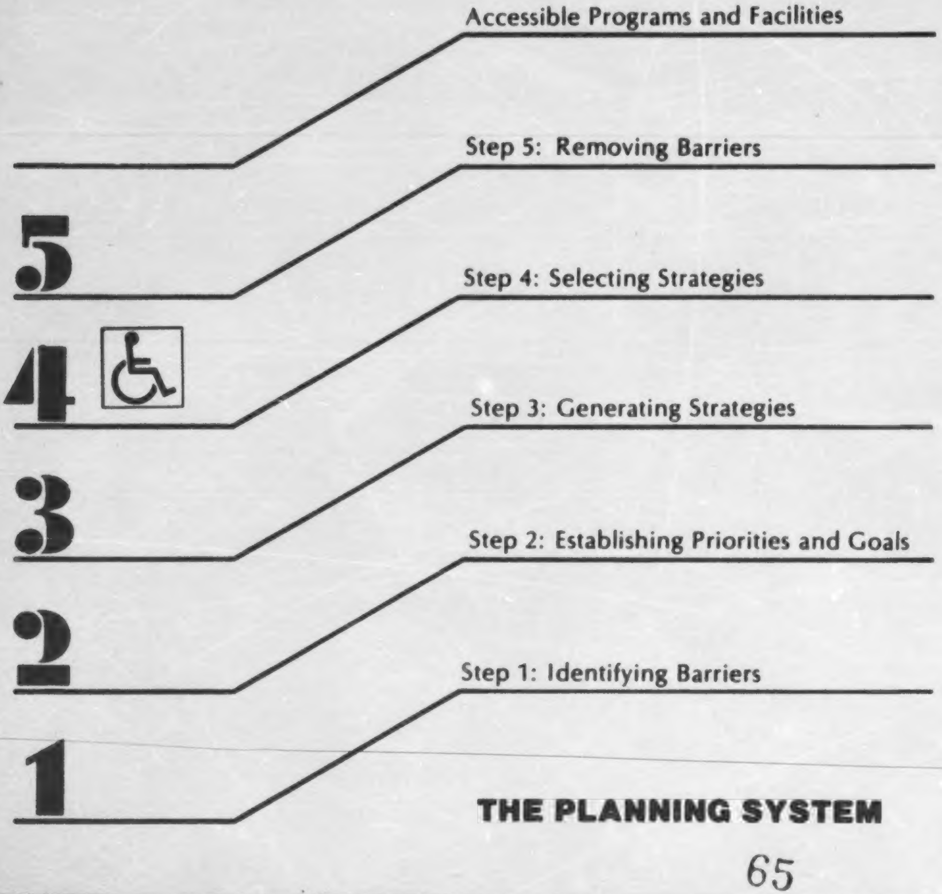
These three strategies were taken into consideration by Markham in the next step of the Planning System, Selecting Strategies.

DIRECTIONS

Now that you have read about the available procedures for generating alternative strategies for removing barriers, please enter in the appropriate spot on the Planning Record the names of the two procedures you believe are most appropriate for your setting. Next, in the booklet entitled, *Step 3: Generating Strategies,* turn to the writeups on each of the two procedures you selected and read the materials. After you have finished your reading. look again at your Planning Record and enter the name of the procedure you will use. Next, return to this booklet, the *Guide,* and continue reading with Step 4: Selecting Strategies.

Step 4: Selecting Strategies

Successful strategy selection is dependent on the thoroughness and comprehensiveness of your barrier identification step, the relevance of your priorities, goals and objectives, the appropriateness of the strategies generated and the decision-making process you employ in arriving at a final selection. If you have done a good job in each of the previous steps, then you have greatly increased the probability of making a good selection.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CRITERIA FOR STRATEGY SELECTION

IMPORTANCE OF SELECTION CRITERIA

In selecting among alternative strategies for barrier removal you will need to have established criteria on which to base your comparisons of the different strategies which have been proposed. Having established criteria serves several purposes. First, it assures that you as the administrator and/or your Local Planning Committee will consider each of the strategies suggested from several different and important perspectives. Second, knowing which criteria you considered when comparing alternatives helps you to justify, for example, to your local board of education or to your immediate supervisor, the final decision which you and your LPC make. Third, selection criteria help you to identify particular strengths and limitations of each strategy, including those that you select. This information will be helpful to you when you evaluate the effects of your strategy for barrier removal. Fourth, criteria lead you to conduct a thorough and systematic analysis and comparison among the strategies proposed. This comparison will help you understand thoroughly what is involved in each potential strategy. Also it will assist you in considering the implications of implementing each strategy. This consideration will be helpful to you when you begin to plan for strategy implementation, Step 5 of the Planning System. Fifth, you will find through use of criteria that strategies which may not be your first choice may have some appealing features or positive aspects which make them potentially useful to address other problems or to eliminate other barriers in your program.

In summary, establishing criteria helps you to compare in a systematic and thorough fashion the alternative strategies that you have under consideration. Also it is helpful to you in planning evaluation and implementation, in justifying selections and in developing program activities.

TYPES OF SELECTION CRITERIA

What types of criteria are useful for evaluating proposed barrier removal strategies? Eight criteria are recommended for your consideration; you may want to use some or all of these criteria in your strategy selection process. Further, depending upon your local situation, you may need to apply additional criteria.

The eight suggested criteria are as follows:

1. effectiveness, or the technological validity of the strategy;
2. cost;
3. congruence of the strategy with program standards and philosophy;
4. administrative feasibility;
5. usefulness of the strategy over time;
6. secondary consequences of strategy implementation;
7. personnel—available, qualified; and
8. physical facilities—available, usable/modifiable.

In the following paragraphs, a definition of each criterion is offered together with a discussion of the implications of each.

1. Technological validity—effectiveness. Technological validity refers to the effectiveness of the strategy in meeting the objective related to barrier removal. Questions of technological validity include: (1) Will this strategy work? (2) Has the strategy been tested and found useful and effective elsewhere? (3) Would this strategy work in my situation? (4) Are there any characteristics of my situation which would negate or invalidate the strategy? In the booklet entitled *Exemplary Programs and Practices* are examples of strategies which have been implemented in other educational units which have proven effective. The examples referenced in the booklet are not intended to be a comprehensive listing but rather examples of types of strategies that have worked. You may need to read the booklet, review the professional literature, and talk with other administrators to determine the probable effectiveness of proposed strategies.

To demonstrate what is meant by technological validity, consider the example of changing negative teacher attitudes toward serving handicapped students through staff development. Research has indicated that a combination of information about handicapped individuals plus direct personal experience with handicapped individuals is an effective way to alter attitudes. However, either approach used individually is much less effective. The technological validity of a strategy using only information or only personal experience would be less than the validity of a strategy that combined the two approaches.

2. Cost. Cost is another criterion which must be considered in making a selection among alterative, competing strategies. Costs affect your decision because sometimes efforts to achieve accessibility result in strategies that conflict in terms of efficiency, effectiveness and equity. The term cost must be considered in a broad sense, that is, more than just the dollars required to purchase a new piece of equipment or to hire new staff. Cost also involves time and effort expended, discomfort and inconvenience endured, and alternatives foregone. Because cost is such an important consideration for program administrators, several pages in this section of the *Guide* are devoted to consideration of costs for overcoming barriers to accessibility. Varieties of cost are discussed and specific considerations associated with removing architectural, transportation, and program barriers are addressed.

3. Congruence with standards and philosophy. A criterion sometimes ignored in systematic decision-making, but critical in legal or contractual situations, is congruence with standards and philosophies under which your program operates and is obligated to maintain. While the issue can seem nebulous, consistency is important in planning for service delivery. Consider, for example, a school district that provides vocational education to moderately mentally retarded students in a vocational program that is housed separately from regular school buildings and located off-campus. While this program strategy makes vocational education available to moderately mentally retarded students, it may be at variance with the intent of the least restrictive environment provision of P.L. 94-142 if it is the only voc-ed program available for these students. The least restrictive environment clause of P.L. 94-142 requires that, to the maximum extent appropriate, handicapped students be educated with non-handicapped students. If this were the case, parents and students desiring vocational education would have limited options—attend the separate, isolated program or attend no program at all. This would be inconsistent with the philosophy of increasing choices for handicapped students.

In practice, many incongruencies between program philosophy and practice become evident only after strategy implementation.

It is important to recognize such deviation from program philosophy before the strategy is implemented in order that you, as administrator, can make necessary adjustments, or modifications.

4. Administrative feasibility. Administrative feasibility refers to the ease with which a strategy may be implemented. Some strategies will be easier to implement than others. Some strategies, for example, require extensive coordination with a number of individuals or departments within a school, or a good deal of orchestration in order to make sure that a large number of factors fall into place and occur in a prescribed sequence; other strategies require little more than occasional monitoring by staff. Administrative feasibility then refers to the degree of difficulty that you as program administrator or other personnel would experience if you were to proceed with the implementation of a certain strategy.

While some strategies will be easier to implement than others, you must be cautious of two potential dangers related to administrative feasibility. You must avoid a tendency on the part of some administrators (whether they be in vocational education or special education or higher education or whatever) to employ the strategy that will be the least inconvenient. Bear in mind that in many instances, when administrators are faced with a decision among two or more alternatives for action, there is a tendency for many administrators to select that alternative which is the least administratively inconvenient.

Some administrators have a tendency to embrace strategies which have appealing simplicity but which will be minimally effective in order to avoid inconvenience. The degree of administrative feasibility should not prohibit an administrator or a LPC from selecting the most effective and efficient strategy.

5. Usefulness over time. Usefulness over time is related to the general effectiveness of the strategy. Generally, one thinks in terms of short periods of time when considering strategies to overcome barriers. Problems exist which need to be dealt with immediately and one looks for strategies which will have an immediate impact. While some strategies will be effective for a short period of time, other equally or more effective strategies will have a longer period of effectiveness. For example, physical modification of buildings or facilities may be useful for relatively long periods of time while in-service workshops for instructional staff may have a shorter period of effectiveness. The ideas, concepts and skills introduced in an in-service training session may be translated into classroom practice and maintained for several months following the in-service training program. However, at the end of four months or six months, there may be little evidence in instructional procedures to suggest that the workshop has maintained its effectiveness. It may be necessary to initiate another workshop in order to renew or regenerate the earlier effectiveness obtained.

You must decide whether the strategy you are considering is basically a short-term effort, or a strategy that will not only be effective in the short run but also continue to provide benefits to the program over long periods of time. Depending upon the barrier and the circumstances, you reasonably could prefer either short-term or long-term strategies.

6. Secondary Consequences. Secondary consequences may be positive or negative. Secondary benefits are the spin-off, unexpected types of benefits or side effects which accrue to your program, faculty, and students, but which were not the primary intention of the strategy that you chose to implement. The space program is a good example of secondary benefits. Not only did the space program develop advanced aerospace technology, but also it developed transferable technologies to other aspects of life such as improved audio systems for the hearing impaired, sonic guides for the visually impaired and better understanding of information processing, e.g., as related to children with specific learning disabilities. The strategies you compare will have secondary effects for your program, some of which you can predict. You must decide if the secondary effects are likely to be positive. For example, a strategy that increases involvement of parents in educational programs may have positive secondary benefits in terms of increased community support for your school. Sometimes, however, unintended consequences occur which may be negative. These types of secondary effects should be avoided if at all possible.

Often, however, the primary benefits to be derived from strategy implementation far out-weigh negative secondary effects that might occur. In such instances, decisions should be made on the basis of long-term primary benefits versus short-term negative consequences. Although it may be difficult to implement a strategy in the short term due to negative secondary effects, it can be worth your effort in the long run.

Consideration of this criterion while you compare strategies will keep you mindful that your selected strategy may have consequences in addition to those you specifically recognize and desire.

7. Personnel. Personnel as a criterion refers to the need for available qualified personnel to implement the selected strategy. It is important because available and qualified personnel may be critical to the potential effectiveness of the selected strategy. As an example of how lack of qualified personnel may be detrimental to strategy implementation, consider the rapid development and expansion of special education programs during the 1960's. The expansion and development took place at a time when there was not available, qualified personnel—especially trained special education teachers to staff the programs which were being started. Program expansion efforts were intended to develop positive consequences for handicapped children in this country, but too many programs tended to be harmful to the children involved. This led to the development of negative opinions and attitudes toward special education programs within the education community. A similar problem may be developing with the implementation of P.L. 94-142. Through this legislation, there should be provided to those handicapped children and youth who need it, physical therapy, speech therapy, occupational therapy, and related types of support services in addition to the basic educational program. While these services are required under law, many children may not receive these services because local education agencies do not have available and qualified peronnel to deliver them.

The more scarce the needed personnel and the higher their qualifications, the higher the cost of the strategy. In addition, lack of available, qualified people may reduce effectiveness of a strategy as well as lead to disappointment and disrepute of the strategy selected.

8. Physical. Available, usable and/or modifiable facilities will be necessary to implement some suggested strategies and must be considered as a criterion. Again, expansion of special education programs during the 1960's provides an example of strategy implementation which did not take this into consideration. During the 1960's it was not uncommon (and in some areas is not uncommon yet today) to find special education programs housed in previously abandoned school rooms or school buildings; sometimes programs are operated out of large storage closets or use converted gymnasiums. Such physical locations represent inferior space locations for program implementation and have led to people making associations between the quality of the program and the inferior space location. The result has been a heightened negative opinion of special education.

Generally, strategies which call for new programs or new personnel, or a combination of both, will necessitate physical facilities. The observant administrator will be aware of available space throughout their educational unit which could be accessed in support of particular strategy implementation. Further, the observant administrator also will be aware of physical facilities or physical space which are usable and/or can be easily modified, and which could be put to use with minimal effort or renovation. Knowledge of these types of resources within the educational unit provides the administrator with more options to consider—more strategies to entertain in considering elimination of barriers to vocational education of the handicapped.

SUMMARY COMMENTS ON SELECTION CRITERIA

The last two criteria discussed, available and qualified personnel and available and usable facilities, are types of criteria which also are reflected in the cost criterion. They have been discussed separately because availability and qualifications are unique aspects of personnel and facilities separate from costs. In some cases a program may have the money to hire the necessary personnel and to rent or lease the necessary physical facilities, but find that certain strategies are untenable because neither qualified personnel nor usable physical space is available.

You will notice that some of the proposed criteria are primarily *quantitative* in nature. These criteria include effectiveness or technological validity, cost, secondary consequences, personnel and physical facilities. The other criteria items are more *qualitative* in nature, including administrative feasibility, usefulness over time, and congruency with program philosophy and standards.

Qualitative criteria will require more careful analysis since they will be difficult or impossible to convert to a dollar value. It is important to keep these distinctions in mind, especially when reviewing techniques for comparing strategies. Some suggested comparison techniques more easily accommodate both quantitative and qualitative information and criteria, while others are more completely dependent upon quantitative data and not designed to handle qualitative information and criteria easily.

As program administrator, you should be aware of the differences between these two types of criteria and information in order to use both. In the past, too often administrators have overlooked qualitative considerations because they were difficult to validate even though they were vitally important.

COST CONSIDERATIONS OF OVERCOMING BARRIERS

The term cost typically brings to mind a precise, quantitative term expressed in dollars and cents. There often is a final indisputable meaning attributed to the figures while, in reality, the terms are far from precise and quite disputable. The degree of confidence that can be placed in figures is determined by the accuracy and comprehensiveness of the process used to generate them. The adequacy of a cost analysis depends on the degree to which the various relevant dimensions of cost have been considered.

Cost should be considered in a broader sense than the dollars required to purchase a new piece of equipment or a batch of supplies. Cost also involves time and effort expended, discomfort and inconvenience endured, and foregone alternatives. A complete cost analysis involves many qualitative dimensions as well as the more familiar quantitative dimensions. Where possible, it is helpful to express costs in dollars since money is a common medium of exchange and is easily understood by individuals with varied backgrounds. However, it is not always possible to convert qualitative cost dimensions into meaningful dollar figures. This is not to say that the qualitative dimension is unimportant; problems arise when these qualitative elements are dismissed as non-cost considerations and are excluded from the cost analysis. A skillful cost analyst is one who is not only able to derive accurate dollar estimates but also is astute in determining which qualitative cost dimensions to leave in qualitative form.

VARIETIES OF COST

There are several varieties of cost that you, as an educational administrator, will need to consider as you make strategy comparisons and decisions. The following list of cost categories is by no means exhaustive; rather, it is a representation of the broad categorical units into which costs are commonly organized.

1. Opportunity costs. When resources are used in a particular way, there is a cost involved in foregoing other ways of using those resources.

2. Relevant and irrelevant costs. Which costs are relevant depends on the strategy to be used. The administrator must define the boundaries of the strategy under consideration, and determine which costs fall within those boundaries.

3. Past and future costs. Future costs are those costs that will be incurred as a result of the decision that is made. Past costs include those costs which already have been incurred and are sometimes referred to as "sunk" costs. Generally, future costs are relevant costs, and past costs are irrelevant costs.

4. Direct and indirect cost. Direct costs are those costs that can be allocated directly to a specific object or activity. Indirect costs are those costs which cannot be tied to a specific program or activity.

5. Fixed and variable costs. Fixed costs usually do not vary; that is, they are independent of the scope and volume of the proposed alternative in question. Variable costs change as output or volume of the proposed alternative change.

6. Recurring and non-recurring costs. Recurring costs are those which occur on a frequent and regular basis, for example, equipment maintenance and repair costs. Non-recurring costs are those which occur infrequently, and not on a regular basis. Generally, non-recurring costs are large cost items such as equipment. Other terms for recurring and non-recurring costs are operations costs and start-up or capital expenditures.

7. External and internal costs. External costs are those that fall outside the realm of the activity in question; for example, there may be costs that other departments incur as a result of the program you initiate that are real and relevant costs but which are external to your program. Internal costs are those that fall strictly within the realm of the activity you are considering.

8. Marginal costs. Costs incurred as the result of marginal changes in the program are called marginal costs. These are similar to incremental costs discussed earlier, and relate to the volume or scale dimensions of the proposed activity, i.e., the cost of adding one more student to a program, one more unit of instruction, or one more instructional objective to a student's program.

9. Development start-up costs. These costs are related to the establishment of necessary technical expertise, space, facilities, etc., to carry out a program. Generally these are considered one time only costs that are not expected to reoccur.

10. Operating costs. Operating costs are those that are incurred in using the program or keeping the program in operation. They are relevant and recurring costs and provide a measure of internal resources expended.

11. Total costs. This category generally includes more than a dollar sum of costs. It includes non-dollar costs as well. Care should be taken to avoid double counting of costs. Care also should be taken to include costs that may be difficult to express quantitatively yet are relevant cost considerations.

12. Average costs. Average costs are computed by dividing total costs by the total units of output. It is sometimes misleading to use average costs for decision-making purposes since they sometimes mask important differences. Quality and effectiveness of services provided and the number of individuals served in a program affect the calculation of average cost, for example, and must be given consideration.

13. Social costs. Social costs which relate to the impact on the students, the community, the environment, or society at large are difficult to compute and therefore are often ignored. Social costs may be incurred when a program is not implemented. Social costs may be very significant. For example, one important social cost dimension—political cost—is so significant that it often outweighs all quantitative cost considerations.

CATEGORIES OF BARRIERS AND ASSOCIATED COST CONSIDERATIONS

Many barriers to equal educational access faced by handicapped students have been identified in the literature. Costs related to barrier removal are difficult to determine. Often, barrier removal strategies are related and costs overlap. For example, costs associated with architectural barrier removal are significantly affected by programming considerations and programming considerations in many instances involve significant transportation costs. You likely will find that a more comprehensive view of cost rather than a categorical orientation will be useful as you compare strategies. Therefore, the categorical discussion offered in the booklet entitled, *Step 4: Selecting Strategies,* should be viewed as descriptive rather than prescriptive. For purposes of the present discussion brief descriptions of suggested categories are noted by way of introduction to the material in the booklet.

Programming. Programming is one of the most significant variables influencing the overall costs of educating handicapped students because it may affect capital construction costs, equipment costs, personnel costs, and transportation costs. Among program cost components are teachers, support services, instructional supplies and equipment, operation and maintenance, administration, fringe benefits, and teacher aides. Programming costs tend to increase with the severity of the handicapping condition and the degree of specialization of the program option adopted.

Architecture. Some of the most significant barriers from a cost perspective for the local administrator are the architectural ones. They are viewed as important because they are the most visible and readily identifiable barriers and, at first consideration, appear to represent the largest fiscal investment in terms of removal. Many administrators have interpreted the requirements of the Education of All Handicapped Children Act, P.L. 94-142, and Section 504 of the Rehabilitation Act, P.L. 93-112, to mean that all buildings must be made accessible to all students with only administrative choices being whether to remodel each building or to construct entirely new facilities. Actually, the Federal legislation states that programs, not buildings, must be accessible to handicapped students. This permits many other less expensive alternative strategies to architectural barrier removal to achieve accessibility. Usable strategies include flexible scheduling, sharing the facilities of another group or agency, remodeling some classrooms and buildings and creatively using personnel and scheduling to make maximum use of accessible facilities.

Transportation. Because of inflation, rising fuel cost and expanding services, transportation costs in the schools are spiraling. A 1977 estimate placed the nationwide transportation cost at $900 million. Some of the variables influencing transportation costs include number of pupils (regular, handicapped and vocational), sparcity of population and road conditions. Extensive modifications will have to be made for some physically handicapped students, teachers and staff, since some handicapped persons are more expensive to transport than regular students. Special lifts, ramps and seating arrangements will have to be made to accommodate these persons unless an alternative to bus transportation is devised.

TECHNIQUES FOR COMPARING STRATEGIES

At this point in your use of the Planning System, you will have generated alternative strategies for removing the major barrier or barriers confronting your educational unit. Your next task is to compare the alternative strategies and select the strategy or strategies that best meet the needs and requirements of your education unit for achieving goals and removing barriers to accessibility. Four techniques are suggested as procedures you can use to compare strategies. The techniques described had their origins in business and industry and only recently have been applied to the field of education. Techniques must be applied with caution and results interpreted in context if they are to yield useful information. Educational administrators have been unable to apply many business and economics decision models because of basic differences in the theoretical assumptions on which they are based. For example, education does not conform to the traditional "market model" since it produces goods which have many non-market costs and returns such as self-esteem and quality of life. In addition, educational objectives do not revolve around profit maximization. In fact, education may come under severe criticism for unused allocations since this represents students unserved. Finally, unlike business, the quality of services rendered is often more important than quantity. It is not sufficient to place handicapped students in the regular classroom and not modify the program for them. Individual needs must be identified and resources allocated in such a way that these needs are met. It is anticipated that the strategy comparison techniques selected for inclusion in this step will assist you with this task.

Brief descriptions and comparisons of each of the four recommended comparison techniques together with the continuing example of using the Planning System constitute the remainder of this chapter. As you read the materials, consider your own situation and try to decide which of the techniques would be most useful to you. Later, you will be referred to additional resource materials within the Planning System for a more detailed explanation of the techniques you have chosen for your situation.

AVAILABLE TECHNIQUES

Decision Matrices (DM). A Decision Matrix is a technique that facilitates quantification of selected criteria and orders and displays information in a form such that the consequences and implications of strategies can be evaluated. A Decision Matrix works best when the number of alternative strategies is relatively small and the selection criteria are finite. Tasks include specifying criteria, determining the relative importance of each criterion, rating the strategies on each criterion, calculating point values for each strategy on each criterion and comparing the total point values for each potential strategy. The entire process will require only a few days, is suitable for individual or group decision making, and produces a useful record of the comparison process for future reference.

Cost Benefit-Cost Effectiveness Analysis (CB-CE). Cost Benefit-Cost Effectiveness Analysis is a hybrid technique that enables the user to compare costs with outcomes of potential strategies in order to select the one that will have the greatest return for dollars expended. It is especially useful when large numbers of strategies must be compared; however, the technique is time consuming and often requires use of a computer. Tasks include reducing all criteria to either costs or effectiveness, i.e., technological validity; calculating quantitative values for each portion of each strategy of these criteria; and calculating through use of prescribed formulas the various required comparisons of CB-CE.

Decision Trees (DT). A Decision Tree is a graphic representation of a series of alternative decisions about a strategy or strategies that will help you clarify choices and risks by projecting alternative outcomes, costs and payoffs of different strategies. The technique helps you examine the multi-faceted effects of selecting particular strategies for barrier removal. It should be used when the number of strategies and criteria are relatively small and when a decision about a strategy will affect and be affected by several other decisions. Tasks include identifying all decision points in all potential strategies and projecting all possible outcomes in terms of time and influence for each possible decision for every strategy. The technique will require several days to complete, depending upon the number of strategies.

Simulation (S). Of the many kinds of Simulation available, computer Simulation is the one most appropriate for comparing alternative strategies for removing barriers to vocational education of the handicapped. A Simulation is a model, a representation of the real-life situation in terms of its most essential elements. In a computer Simulation participants assume roles and make decisions in response to their assessment of information provided by the computer program. The computer program then projects what is most likely to happen, given the decisions of several individuals working alone or simultaneously by using probability estimates. Computer Simulations offer some unique advantages— very complicated problems may be considered and the decision-maker may experiment with situations which could not be permitted to develop in the real world. The major disadvantage to Simulation by computer is the initial cost of building or purchasing the computer model and the time factor. Tasks involve adapting or creating computer models, collecting and feeding background information into the computer model, programming and interpreting the resulting projections.

COMPARISON AND DISCUSSION OF TECHNIQUES

When should one technique be chosen over another? How do the techniques compare with each other? In fact, the techniques vary on five characteristics—kind of information provided, effectiveness, flexibility, complexity and resources required. Consideration of these characteristics will permit you to choose the most appropriate technique for your situation. Below is a more complete description of the five characteristics:

1. **Kind of Information.** What information does the administrator have when the technique is completed? Are the data easily understood and used?
2. **Effectiveness.** How effective is the technique? How dependent are the results of the technique on external factors? How valid is the information generated?
3. **Flexibility.** Over what range of educational settings can this technique be applied? Can the method be used in small and large systems?
4. **Complexity.** How complex is the technique? What knowledge and skills are required to use the procedure? Can it be used by both consumers and administrators? How sophisticated must participants be in order to function effectively in the group or to respond to questions?
5. **Resources.** What resources are required to implement the technique in terms of time, cost and equipment? Will consultants be necessary?

The Strategy Comparison Techniques Chart, Fig. 5, presents a brief summary of each technique in terms of these five characteristics. In it, each of the techniques mentioned is listed horizontally and the characteristics vertically. In each block of the table are found evaluations of one characteristic of each technique. Discussion of the table which follows will proceed by characteristic. All techniques will be examined and compared in terms of each characteristic. As noted in both the figure and the narrative, each technique has some advantage. *The choice of technique is* **yours** *to make.* You may, in practice, decide to use a combination of techniques.

1. Information. The kind of information provided by each technique varies. Decision Matrices results in a numerical score for each potential strategy on each criterion and for all criteria when examined together. CB-CE Analysis produces a deceptively simple ratio on which to compare alternative strategies that must be interpreted using other relevant qualitative information about the nature of the problem. Emphasis in CB-CE Analysis is on the criteria of cost and technological validity. Decision Trees produce a graphic display of the effects of different decisions within each potential strategy. It is particularly useful when considering probable outcomes over time. Likewise, computer Simulations are especially useful for dealing with projected outcomes of implementing specific strategies. Simulations are particularly useful for developing estimates about enrollments, costs or transportation issues. They can suggest probabilities for each possible outcome of each potential strategy if background information is sufficient.

2. Effectiveness. All suggested techniques are as effective as the information from which their input derives. Assuming unlimited resources and that the information provided was adequate and complete, CB-CE analysis is probably the most effective technique for use in making choices among alternative strategies if strategies are viewed primarily as issues of cost and technological validity. The literature attests to its increasing popularity as a resource allocation device and its continued use has been encouraged by many educational administrators.

The effectiveness of all techniques is dependent upon the administrator's judgment, insight and skill in managing and anticipating staff's reactions. In instances where the intent and purpose of suggested techniques are fully understood and accepted, each procedure can be effective.

Given limited time, Decision Matrices have proved to be a useful device for the administrator who must make a quick decision systematically and must be able to justify it to agencies to whom the educational unit is accountable. The results, as with other techniques, are largely dependent on the user's judgment since most of the data are supplied by the user. However, the procedure is straightforward and useful for comparing strategies on quantitative and qualitative criteria.

Decision Trees have a record of successful applications in educational settings. The approach, when implemented without the aid of a computer, is most appropriate for small-scale strategies and relatively few criteria.

Computer Simulations have proven to be an effective procedure for decisions involving quantitative demographic data. The technique is particularly useful when a variety of similar strategies have been proposed.

3. Flexibility. Of all the techniques discussed, the Decision Matrix is the one most adaptable to the widest range of educational problems and potential strategies. While a common procedure in the management literature, its value as a strategy comparison device for education has been overlooked often because of its simplicity.

CB-CE Analysis, Decision Trees and Simulation, although still in their infancy in education, are applicable to a wide range of educational problems and settings. For complex problems requiring extensive computer time, Decision Trees and Simulation are more adaptable to larger educational units with computer facilities. CB-CE Analysis is also restricted in its application. It is most applicable in broad decision situations and in settings where costs and technological validity are the primary issues. It is maximally utilized in educational units with the capacity to handle substantial quantitative data.

FIGURE 5.
STRATEGY COMPARISON TECHNIQUES CHART

Characteristics	Decision Matrices
Information	Produces a tabular presentation of decision alternatives and variables affecting them. Variables may be weighted in order to produce a ranked list of decision alternatives.
Effectiveness	Dependent on the administrator's skill in identifying key variables impinging on decision alternatives. Can be very effective.
Flexibility	**High:** Applicable across a wide range of educational settings and problems.
Complexity	**Low:** Very straightforward.
Resources **a) Person hrs.**	**Low:** 10-20 hrs.
b) Funds	Low
c) Equipment	None.

Rating System: High-Moderate-Low

	Decision Trees	CB-CE Analysis	Simulation
	Produces a list of decision alternatives, probable outcomes of each and, in some instances, costs associated with each.	Produces a simple ratio of costs to benefits & to effectiveness of alternative strategies.	Produces working computer model system.
	Dependent on administrator's comprehensiveness in identifying relevant alternatives & supplying reasonable cost & probability estimates.	Powerful public relations and accountability device. Very effective as a resource allocation device if cost & effectiveness measures were skillfully derived.	Depends on "goodness of of fit" of the model to real setting.
	Moderate: Most applicable to problems too complex for matrix presentation.	**High:** Applicable across a wide range of educational settings & problems.	**Moderate:** Can be applied to many problems & settings.
	Low to Moderate: Graphic display & projection can be difficult.	**Moderate to High:** Some tedious calculations are required; in addition, qualitative factors must be assigned a value.	**Moderate:** Must understand what computer does & what data are required to develop projections.
	Moderate: 20+ hrs. for projections & display.	**High:** Several hundred hours.	**High:** 20+hr./person (not counting programming).
	Low	High	Moderate to High
	None (can include computer use).	None, unless a computer is needed.	Computer & programmer.

4. Complexity. Educational administrators are increasing the frequency of their use of rational decision-making techniques, becoming more comfortable with them as a way to cope with resource allocation problems. As the legal, social and fiscal complexities of the equal access legislation come increasingly to bear on the educational administrator, this trend is likely to continue. Therefore, complexity may not be as significant an issue as the other four factors.

Suggested procedures for comparing alternative strategies vary in complexity from relatively simple to relatively complex. The Decision Matrix is a relatively simple yet effective technique. A Decision Tree is more complex than is a Decision Matrix, because it is somewhat more difficult to depict graphically and because it requires consideration of all possible implications of every projected decision. Computer Simulation is the third most complex technique, requiring skill in data manipulation and the use of computers. CB-CE Analysis is the most complex of the four proposed techniques. It requires skills in quantitative data manipulation and working with formulas. In many instances, CB-CE Analysis also will involve use of the computer to perform calculations or comparisons.

5. Resources. Generally, the longer the time required for implementation, the more costly the technique. This is clearly the case with the most costly technique: Cost-Benefit/Cost-Effectiveness Analysis. It can take several months and several hundred person hours to complete. Simulation is moderate in terms of cost and time requirements largely due to computer costs and the time required to construct models and programs. Low in cost and moderate in time requirements are Decision Trees. The least costly technique is Decision Matrices; it requires a minimum of one person for implementation and does not require computer assistance.

These resource estimates are highly variable and depend greatly on the accessibility of computer facilities and personnel to perform computer and other quantitative analyses. In educational units that have computer facilities and technical specialists, costs of many of these techniques may be significantly less than in units that do not have such available.

EXAMPLES FOR CONSIDERATION

Tigris School District. As you will remember, David Williams and his Local Planning Committee used a series of Brainstorming sessions to generate strategies for achieving the accessibility goals of the school district. Four strategies were produced to meet the selected goal and objective:

1. Establish and maintain a volunteer program of parents and representatives of community groups to work in the schools on a regular basis with vocational teachers;
2. Conduct an extensive five-day in-service program for all regular vocational education teachers;
3. Create a related instructional aide program which would provide a classroom aide to each regular vocational education teacher; and
4. Develop resource room programs to provide direct special education services to students and instructional materials and support to vocational education teachers.

In order to give consideration to each of the four alternatives suggested, Williams first had to make cost estimates for each of the alternatives proposed. Next, with the LPC, he selected the Tigris comparison and selection criteria. Finally, he considered which strategy comparison technique he would employ to choose among the four potential strategies. Reviewing the available techniques presented, he was drawn to both Decision Trees and Decision Matrices. Both of these provided opportunity for him to make comparisons among the four alternative strategies suggested. In terms of time and resources required, both fell within his existing constraints of time and resources, although Decision Trees might have taxed available time.

The comparison criteria selected by Williams and the Tigris LPC were cost, technological validity or effectiveness, secondary consequences, and administrative feasibility.

Williams selected Decision Matrices as the comparison technique because he believed it was the least time-consuming technique, yet a systematic procedure that provided comparison of each potential strategy. He also favored DM because he had a limited number of potential strategies and comparison criteria and because it would involve the LPC in the decision-making process.

Williams and the LPC worked through the Decision Matrix for each suggested strategy and criteria. They derived the following figures and information about each suggested strategy:

STRATEGIES

- Volunteer Program:
  - Cost—Low to moderate
  - Effectiveness—Limited due to need for positive attitude
  - Administrative Feasibility—Moderate
  - Secondary Consequences—Potentially negative (more teacher time)
- Staff Development Program:
  - Cost—Low
  - Effectiveness—Moderate
  - Administrative Feasibility—Highly feasible
  - Secondary Consequences—Potentially positive
- Instructional Aide Program
  - Cost—High
  - Effectiveness—Very High
  - Administrative Feasibility—High
  - Secondary Consequences—Potentially negative in terms of time and feelings of rivalry among staff at different schools.
- Resource Teachers Program:
  - Cost—Moderate
  - Effectiveness—High
  - Administrative Feasibility—Moderate
  - Secondary Consequences—Potentially positive

The LPC had determined that cost and effectiveness were the most important considerations; secondary consequences were least important. As they performed the comparisons and other calculations, using the four criteria, the two preferred strategies were the staff development program and the resource teacher program. The volunteer program strategy proved to be deficient, primarily in terms of effectiveness rather than cost. While this strategy was among the lowest in cost, it appeared to be ineffective for providing vocational teachers with support resources. Williams did make the observation that this strategy might be employed at a later point in time, once teachers were ready to serve handicapped students and felt confident to do so.

The third alternative strategy—the instructional aide program—was rejected on the basis of cost rather than effectiveness considerations. This strategy, if implemented fully, would have cost about one-half million dollars. Further, Williams felt provision of instructional aides without attitude change and competency gain on the part of the vocational education teachers could conceivably result in mismanagement of these newly available resources.

Ultimately, the LPC endorsed the resource teacher program strategy. It was more costly than the staff development strategy; but, it provided an opportunity to teach vocational education teachers new competencies, to improve their management skills, to provide information and experience in working with handicapped students, and to increase their enrollment in regular classes. The Committee noted that the staff development strategy had high validity for meeting other objectives which had been established. Williams and the LPC moved ahead to implementation of the strategy.

Euphrates Community College. Hannah Markham was faced with the task of evaluating three strategies that were proposed by her 504 Committee. Each strategy was felt to be appropriate for achieving one specified objective. The three strategies were:

1. Modification of the catalog to include only those prerequisites (for example, courses and specific skills) that instructors felt necessary and could justify;
2. Development and publication of a mission statement; and
3. Analysis of reading levels of textual and instructional materials.

In reviewing the techniques available for structuring the comparisons among alternatives, Markham gave serious consideration to three of the resource allocation approaches identified in the planning manual: Decision Matrices, Decision Trees and CB-CE Analysis. All of these procedures were considered appropriate for several reasons.

The CB-CE Analysis approach was appealing because it would allow her to address the major policy issues related to the under-enrollment of handicapped students. She also felt comfortable using it and did not think it would require heavy resources since it could become a project of one of the college classes. Decision Matrices and Decision Trees, while more focused in terms of dealing with specific strategies rather than looking at strategies within the context of the system, were also appealing because of their ease of understanding and the low volume of resources (time and money) required to carry them out.

She elected to use Decision Trees as her approach to selecting the strategy to use. The criteria that she employed included: (1) effectiveness or technological validity, (2) administrative feasibility, (3) cost, (4) usefulness over time, (5) congruency with program philosophy and standards, and (6) secondary consequences.

Using these criteria in her application of the technique of Decision Trees to the strategy selection process, she mapped out the decision points and alternative implications of decisions for each of the three suggested strategies. The strategy of developing and publishing a mission statement was not projected to have a great impact on eliminating unnecessary prerequisites even though it could embody an open admissions policy. The strategy was feasible and appeared to have no negative effects. Analysis of reading levels and math requirements of textual and instructional materials was judged to be very inexpensive, very easy to do and without negative implications. While the strategy was focused on eliminating prerequisites, it had potential to set the stage for developing an open admissions policy by establishing an empirical basis for any specified prerequisites. The strategy of simply removing all prerequisites was not judged to have much effect on an open admissions policy. Further, while it would eliminate unnecessary prerequisites, the strategy posed a number of potential implementation problems on the Decision Tree due to its lack of rigor. It was quickly eliminated.

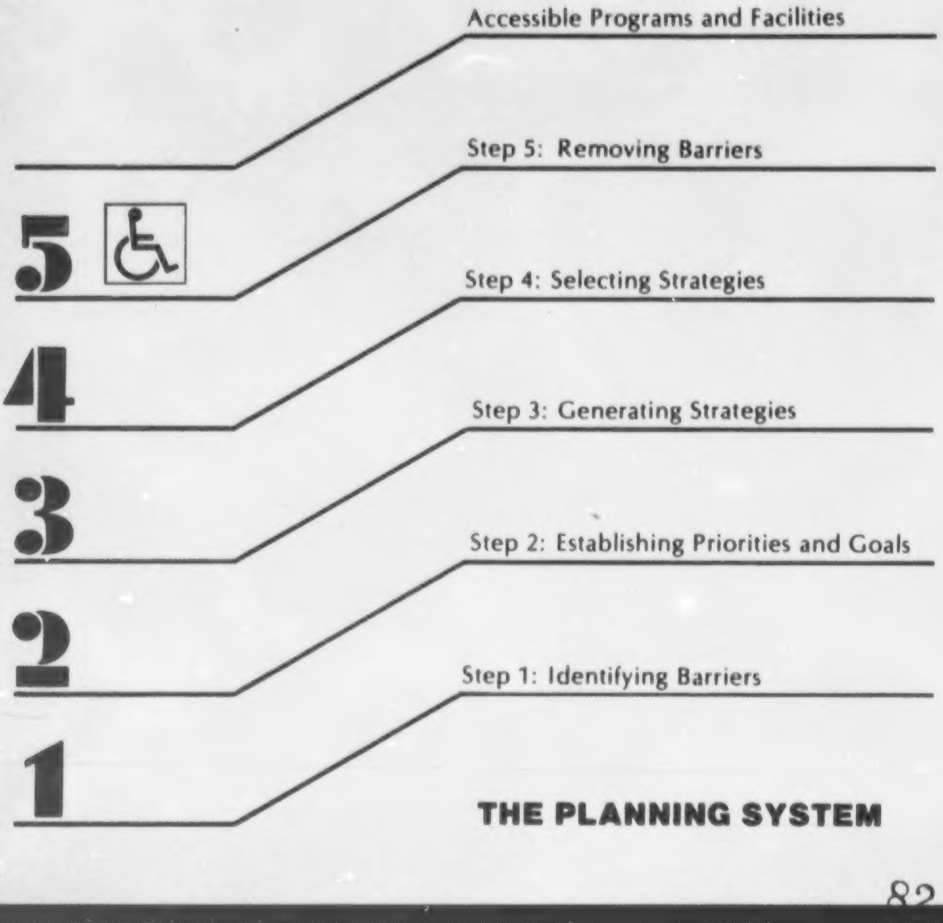
As a result of her use of the Decision Tree, Hannah Markham recomended an analysis of prerequisite reading and math levels for all courses. The 504 Committee concurred with her recommendation and moved to establish the proposed research study immediately in order to increase the participation of handicapped students in the school's vocational education programs.

DIRECTIONS

Now that you have read about the considerations that one should make in choosing among suggested strategies, please check in the appropriate place on your Planning Record the names of the two procedures for strategy comparison you believe are most appropriate for your particular setting. Next, you should read in more detail about these two approaches in the booklet entitled, *Step 4: Selecting Strategies*. Now turn to that booklet and read the descriptions of the two approaches that you have selected. When you have completed your reading, complete the other questions related to Step 4 on the Planning Record. After supplying the information, return to your work in the *Guide*.

Step 5: Removing Barriers

Once you and your Local Planning Committee have identified barriers; established priorities, goals and objectives for identified barriers; generated alternative strategies for overcoming barriers and achieving goals; and selected among alternative strategies the most appropriate strategy(ies) for your educational unit, you are ready to undertake the fifth and final step in the Planning System—Removing Barriers.


Accessible Programs and Facilities
Step 5: Removing Barriers
5
Step 4: Selecting Strategies
4
Step 3: Generating Strategies
3
Step 2: Establishing Priorities and Goals
2
Step 1: Identifying Barriers
1

The tasks involved in implementing selected strategies to achieve goals and remove barriers are the logical conclusions of the Planning System.

Like the other steps in the Planning System, Step 5 requires thoughtful preplanning, particularly in terms of using time and marshalling resources. If you have used the other steps in the Planning System carefully and completely, you will have done a substantial amount of the preplanning work for Removing Barriers.

Among the factors and activities you must consider and undertake when removing barriers are:

- Working with the Local Planning Committee (LPC);
- Combining strategies, objectives, goals and needs into a program;
- Identifying factors that will facilitate or inhibit implementation of the strategy;
- Outlining tasks to be completed;
- Deciding on the timing of each task;
- Determining resource needs for each task;
- Identifying needed financial resources;
- Locating and securing space;
- Recruiting, hiring, reassigning personnel or responsibilities;
- Coordinating with other agencies or persons;
- Obtaining needed support services;
- Obtaining needed supplies and materials;
- Informing consumers;
- Planning for evaluation;
- Providing necessary background to/for involved parties; and
- Initiating activity.

Three of these activities—working with the LPC, organizing materials into a program and planning for evaluation—are especially critical. Work with the Local Planning Committee should continue as in other steps in the System. It also is particularly important to involve directly those persons who will be directly affected by the strategies selected for implementation.

Continued involvement will result in continued commitment to the project, maximum utilization of community contacts, and community- and school-wide support for the program that will be contagious.

CREATING A BARRIER REMOVAL SCHEDULE AND ORGANIZING MATERIALS INTO A PROGRAM

Planning for implementation specifies how the steps of implementation are to be carried out; this step is both necessary and time-consuming. There are few shortcuts; however, use of several techniques can strengthen local efforts. Creating a Barrier Removal Schedule and planning your implementation program means organizing information about barrier identification, priority rankings, program goals and objectives and selected strategies for achieving barrier removal; you must consider what is to be used, by whom, when, how and why in strategy implementation. Further, the Barrier Removal Schedule or implementation plan must acknowledge expected outcomes and provide a means for keeping track of program activities. It is suggested that Local Planning Committee members and possibly a consultant be used in drawing up the formal plan. Each should clarify expectations and draw upon personal practical experience when participating. Program strengths and limitations must be explored and addressed.

As you begin to organize your thinking about implementing the selected strategy(ies), you may choose to develop a Change Matrix as a way of categorizing and systematically addressing the various types of actions and effects you hope to generate as you implement the selected strategy. A sample Change Matrix is presented in Fig. 6. As you will note in the figure, the matrix catalogs the areas in which you hope to affect change and the types of activities you might undertake to bring about the desired change. The listed categories of areas of change—technology, staff, procedures and organizational policies —are merely suggestive of the kinds of changes that may be necessary to implement specific strategies for achieving equal educational accessibility. You may find other category blendings more helpful as you organize your thinking about implementation.

The other six columns in the figure specify the kinds of activities necessary to carry out the changes specified in the "changes" column. Again, these categories are offered only as suggestions. The example illustrates the types of activities involved in a procedural change related to identification and placement procedures.

However you have decided to organize your thinking about implementation, the first required task in this step of the Planning System is to complete the Barrier Removal Schedule as described earlier in the *Guide.*

From your Change Matrix chart or other analysis of your strategy and goals, identify all of the "action steps" that need to be taken in order to prepare for and implement the activity. An "action step" is a task that will be carried out in order to put strategies into effect.

Not only must all "action steps" be listed, but also they must be viewed in relation to each other in terms of dependence-independence and amount of time needed for completion. Some "action steps" or activities cannot be completed until a previous step is completed, while others can be completed independently. The "action steps" can be derived by examining the selected objectives and chosen strategies in the context of the planning activities listed earlier in this section.

Suppose you develop the "action steps" for a strategy for overcoming the lack of information about vocational-technical education in your community. Specifically, assume the objective of increasing knowledge of vocational education among 50 percent of the parents of eligible handicapped students in one calendar year. The strategy selected to achieve this goal of overcoming the barrier of lack of knowledge and awareness is to hold individual parent conferences between vocational teachers and parents of handicapped children. Resources identified to implement the strategy include: (1) using teacher workdays for most of the conferences, and (2) hiring a vocational counselor aide to coordinate the effort. The effort is to be completed before the beginning of the Spring semester in February, or a time period of seven months. Among the "action steps" involved would be the following:

1. By 1 August begin recruiting process and select counselor aide
2. By 1 August initiate paperwork to establish position within personnel
3. By 15 August decide on teacher workday dates
4. By 1 September process selected individual into established personnel position, i.e., assure educational and work experience qualifications, salary, etc.
5. By 1 September provide orientation for involved teachers
6. By 15 September devise scheduling plan in conjunction with aide and teachers
7. By 15 September develop and implement in-service program on teacher responsibilities
8. By 15 September engineer teacher release from workday responsibilities
9. By 1 October obtain names and pertinent information on parents of handicapped students
10. By 15 October devise parent contact schedule and contact parents
11. By 1 February schedule and conduct conferences
12. By 1 February follow-up on conference with aide debriefing of parents and teachers.

FIGURE 6. EXAMPLE OF A CHANGE MATRIX

AREAS OF CHANGE	Design	Training
Technology		
Staff Skills: Attitudes:		
Procedures Identification/ Placement Procedure	• Written document	• Staff development to teach roles in identification and placement procedures.
Organizational Policies		

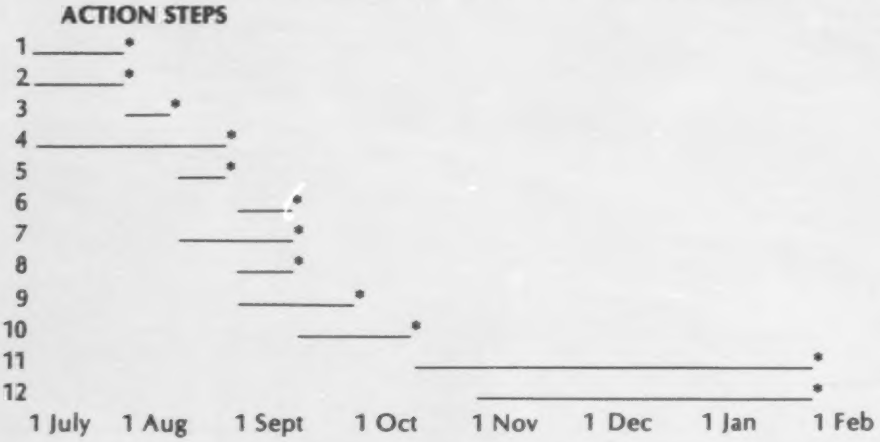
TYPES OF ACTIVITIES

Promotion	Implementation	Support	Administration
• Involve staff in developing procedures	• Plan workshop • Distribute materials • Monitor activity • Evaluate/revise	• Develop inventory forms and record keeping system • Renewal credit for certification	• Monitor activity • Evaluate efforts/revise

These action steps, transcribed on a timeline, are depicted in Fig. 7, A Sample Performance Chart. As you can see in this sample, some separate action steps (1, 2, 4, 5) can be performed at the same time, while some steps (3, 6, 7) cannot be accomplished until others (1, 2, 4, 5) have been completed. Although this example is simple, you can follow this same process in planning for the implementation of very complex strategies. The steps to follow are:

1. Indentify the action steps that need to be taken.
2. Determine how they are related to each other—dependent or independent.
3. Estimate a timeline for the completion of each action step, and from start to finish.

FIGURE 7. A SAMPLE PERFORMANCE CHART



When you combine the Performance Chart with assignment of responsibilities, assign time and product expectations to staff, and determine procedures to evaluate outcomes and steps, you have created a comprehensive work plan for project implementation called a Barrier Removal Schedule. The last remaining tasks in planning for implementation are (1) to check the phasing of action steps against the availability of resources to insure that prescribed activities are achievable within the established time constraints and (2) to examine proposed activities in order to try to anticipate potential obstacles to successful implementation. If you are aware of potentially serious blocks to implementation, you may be able to plan ways to avoid anticipated problems related to your activity phasing, staffing and resource inventory. When you have recorded this information, you will have completed the Barrier Removal Schedule.

AVAILABLE TECHNIQUES

Three different types of planning techniques have been included in Step 5. Multiple procedures were included to enable you to match the particular characteristics of your institution or school district to one or more of these planning techniques. Such flexibility will (1) permit you to make the important decisions concerning planning for accessibility, (2) allow the Planning System to be adapted to most educational settings, and (3) increase the validity and reliability of your information. The suggested techniques are: (1) Force Field Analysis (FFA), (2) Program Evaluation and Review Technique (PERT), and (3) Management By Objectives (MBO). Brief descriptions and comparisons of each of the three recommended techniques follow. As you read the materials, consider your own situation and try to decide which of the techniques would be most useful to you. Later, you will be referred to additional resource materials within the Planning System for a more detailed explanation of the techniques you have chosen.

Force Field Analysis (FFA): This technique focuses group discussion on the forces operating for and against the realization of a particular goal or possible solution to a particular problem. "Force" may be defined as any physical, organizational, emotional, or attitudinal circumstances which must be considered in making a particular decision. Six to eight members are considered ideal for Force Field Analysis; larger groups may be divided into smaller groups this size. The leader introduces the technique and records the forces operating for and against implementation of the strategy as the group generates them. FFA groups work best if each has just one strategy to consider at a time. FFA groups are useful for suggesting the long-range effects of a decision and for gathering information about attitudes toward particular strategies. A session usually does not last over two hours.

Management By Objectives (MBO): Management by Objectives concentrates on the roles of staff involved with implementing selected strategies. It is most appropriate for use in educational settings where a commitment to and acceptance of the solution or strategy for barrier removal exists. The basic idea is to spell out precisely what people are to do and when they are to do it. Among the activities associated with MBO are deciding who will participate, stating objectives for the school, stating individual objectives, holding individual goal-setting conferences, and monitoring and evaluating progress toward goals. This technique can require several weeks or months to implement.

Program Evaluation and Review Technique (PERT): PERT focuses on the sequence, time and resource requirements of action steps related to strategy implementation. A PERT is usually constructed by one person, working in conjunction with other staff. It is particularly useful for minimizing waste and for mapping the relationship and necessary pacing of required tasks within the selected strategies. Among the tasks involved in using PERT are listing the major tasks, listing milestones of task completion, sequencing tasks, constructing a network of activity, estimating time for task completion, estimating the critical path, estimating cost and resource requirements and setting up a calendar of events. PERT diagrams can be completed for most strategies in several days.

COMPARISON AND DISCUSSION OF TECHNIQUES

When should one technique be chosen over another? How do the techniques compare with each other? In fact, the techniques vary on five characteristics—kind of information provided, effectiveness, flexibility, complexity and resources required. Consideration of these characteristics will help you to choose the most appropriate technique for your situation. Below is a more complete description of the five characteristics:

1. **Kind of Information.** What information does the administrator have when the technique is completed? Are the data easily understood and used?
2. **Effectiveness.** How effective is the technique? How dependent are the results of the technique on external factors? How valid is the information generated?
3. **Flexibility.** Over what range of educational settings can this technique be applied? Can the method be used in small and large systems?
4. **Complexity.** How complex is the technique? What knowledge and skills are required to use the procedure? Can it be used by both consumers and administrators? How sophisticated must participants be in order to function effectively in the group or to respond to questions?
5. **Resources.** What resources are required to implement the technique in terms of time, cost and equipment? Will consultants be necessary?

The Barrier Removal Techniques Chart, Fig. 8, presents a brief summary of each technique in terms of these five characteristics. As noted in both the figure and the narrative, each technique has some advantages. *The choice of technique is* **yours** *to make.* In fact, you may select one technique or, perhaps, decide to use two or more in combination.

1. Information. All of the suggested procedures can provide valid and reliable information. However, the information is related to different major issues. For example, FFA produces a list of forces for and against implementation of a certain strategy. The forces will suggest the steps that need to be taken. However, the administrator will need to determine the action steps related to particular forces. PERT produces a schedule for strategy implementation that can include statements of time, resources and responsibilities. MBO produces statements about individual behavior or activity relative to strategy implementation. A decision concerning which strategy to use must be based primarily on when and why you intend to use the selected procedure.

2. Effectiveness. Each technique is effective even though each is dependent upon the information input of the participants involved in the procedure. For example, forces identified in FFA depend upon the statement of the problem and upon the experience of the participants. MBO effectiveness depends upon the honesty and commitment of staff. PERT effectiveness depends upon the ability of the administration to make accurate time and resource projections.

3. Flexibility. The flexibility of each technique is high; however, MBO is most useful for strategies that involve staff directly in implementation.

4. Complexity. FFA is relatively straightforward. The group leader and group members work from personal experience and logic related to similar situations. PERT involves projecting time and resource requirements for the selected strategies; however, the process is uncomplicated. MBO requires use of several skills including the ability to write objectives, competencies and experience in negotiating didactic agreements on objectives, and counseling skills.

5. Resources. Resource requirements of each suggested technique are low. Only MBO requires a moderate expenditure of time, dollars or equipment. The major resource requirement is administrative time for each of the three techniques.

PLANNING FOR EVALUATION

As you develop your plans for implementation, one of your most important considerations should be evaluation. Evaluation provides you, as the decision-maker, with information about the merit of the suggested plans, the activities employed and the results of the intervention strategies. Among the questions a comprehensive evaluation will answer are:

- Did the strategy work?
- How well did it work?
- What contributed most to the success of this strategy?
- Why did things not go the way they were planned?
- Was the barrier identification information correct?
- Was the program effective in meeting project goals?
- What changes should be made in order to meet objectives more expeditiously?

It is recommended that two types of evaluation be used in this program for achieving accessibility—*process* evaluation and *product* evaluation. Process evaluation looks at the day-to-day operation of the program—it helps to assess whether or not the implementation tasks or activities and treatments are working on a daily basis, as planned. To perform such evaluation, you must collect information about project progress in terms of time, resources, people involved, responsibilities discharged, and progress toward intended outcomes. Information collected for the purpose of process evaluation can be summarized over time to provide information for the second type of evaluation, called product evaluation. Product evaluation focuses on final outcomes. It includes not only analysis of use of time and resources, but also how well the objectives and goals were met by the selected strategy in terms of outcomes on the target population.

> *All evaluation, whether it be process or product, should be related to stated priorities, goals and objectives. Evaluation helps to determine the extent to which goals and objectives have been met and barriers removed.*

Evaluation indicates the overall success of the program and/or the accomplishment of specified objectives. It measures current progress and suggests immediate program revisions that will enhance the probability of accomplishing program objectives and meeting project goals. In order to evaluate each strategy in relation to the specified objective and articulated goal, you should consider at least the following items:

- Specification of goal, objective and strategy in product outcome data;
- Incorporation of time tables, administrative objectives and so forth as process data;
- Specification of data needs and sources;
- Preparation of instruments;
- Development of data collection and sampling;
- Decision on data analysis procedures; and
- Creation of questions/success criteria.

You should evaluate each objective. In some cases, you may develop an evaluation item that covers several objectives. It is recommended that you develop an evaluation plan to help you keep track of evaluated activities. A Sample Evaluation Plan is depicted in Fig. 9. As noted in the figure, the plan provides for both process and product evaluation. The results of the evaluation effort will provide evidence of strategy and program effectiveness.

In general, there are two different types of measurements that can be used with various target groups—standardized and non-standardized. Standardized measures are those instruments that have been normed on some other group and are usually available commercially. Non-standardized measures, locally constructed, can provide useful planning information.

FIGURE 8.
BARRIER REMOVAL TECHNIQUES CHART

	FFA
Information	Produces a list of forces for and forces against implementation of a specific strategy. Forces can be ranked according to importance.
Effectiveness	Effective as a tool for identifying factors that will inhibit or facilitate strategy implementation.
Flexibility	**High:** Useful with any type of strategy.
Complexity	**Low:** Requires reasoning from experience.
Resources **a) Person Hours**	**Low:** 10 hours administrative and 2 hours LPC.
b) Funds	**Low:**
c) Equipment	**Low:** Room for meeting and flip chart

Rating System: High-Moderate-Low

MBO	PERT
Produces a chart for task sequencing and time and resource requirements.	Produces lists of mutually negotiated organizational and individual goals related to implementation. Goals can relate to any issue.
Effective as a management and monitoring tool; especially useful for keeping track of complicated strategy. Dependent on estimates.	Highly dependent upon the administrator's ability to convey and generate commitment.
High: Useful with any type of strategy.	**Moderate to High:** Useful with most types of of strategies, particularly those that involve staff responsibilities.
Moderate: Requires projections and calculations.	**Moderate:** Requires skills in writing objectives, counseling and negotiation.
Low: 24 hours administrative plus other staff input.	**Moderate to High:** 40 hours administrative and staff.
Low:	**Low:**
Low: Paper and desk calculator	**Low:** Meeting room for individual conferences

FIGURE 9. A SAMPLE EVALUATION PLAN

BARRIER: Lack of knowledge about and use of vocational education opportunities within the client community.
GOAL: Improve accessibility to vocational programs by increasing knowledge and awareness of opportunity among community and members.
OBJECTIVE: Increase the knowledge of vocational education programs of 50% of the parents of handicapped students in the service area during the upcoming school year.
BARRIER REMOVAL: Parent-teacher conference.

	Time Schedule	**Data Needs Data Sources**
Process Evaluation:		
• **Conference Scheduling Progress**	September 15	• Numbers of parent conferences scheduled • Numbers of parents contacted • Number eligible by teacher
• **Pilot Survey of Parent Awareness**	November	• Parent knowledge about program and reaction to conferences
Product Evaluation: • **Survey of Parent Awareness**	February (End of Month 7)	• Parent knowledge about vocational program • Parent attitude toward vocational program • Parent reaction to conferences
	February (End of Month 7)	• Numbers of parents eligible and met with • Teacher logs, central office records, and counselor aide log

Instruments	Data Collection/ Sampling Plans	Success Criteria
• Teacher logs and log of vocational counselor aide	• Inspection of counselor aide log and a sample of 3 teacher logs, selected randomly	• 80% of the eligible parents for each teacher should have been contacted and scheduled
• Locally constructed Parent Awareness Interview Schedule	• Phone survey of 15 parents selected randomly	• 60% of the 15 parents interviewed must respond acceptably and favorably
• Locally constructed constructed Parent Awareness Interview Schedule	• Phone survey of a random sample of 75% of the parents of handicapped students	• Have at least 75% of the parents interviewed been able to respond to an acceptable level on the majority of questions on the interview guide?
• Frequency count and precentage of numbers of parents eligible and involved in conferences	• Inspection of teacher records, log of vocational counselor aide and central office records	• Have at least 85% of the parents eligible for a parent-teacher conference participated in such a conference?

However, the use of non-standardized tests often requires additional local effort to assure external agencies, to whom the program may be accountable, that the employed measures were reliable and valid. The evaluation plan may involve collecting data at only a few, specific times during the year, or it may involve continuous collection of data.

Who will be responsible for the evaluation? You may choose to designate a staff evaluation person—to coordinate all evaluation activity and prepare periodic reports. You may have a person who has part but not all of their job description as a program evaluator, or you might hire an outside consultant to perform the program evaluation. This procedure has gained increasing favor, especially when the third party evaluator can be used as an ongoing program consultant. Another alternative is to delegate evaluation responsibilities to a special interest group such as a parent group. Still another option would be to combine several of these approaches. For example, an evaluation coordinator could be appointed to solicit input from parent organizations and opinions from outside consultants who have reviewed the program. This provides a good mix of opinions from qualified and interested persons representing different perspectives.

Appointing an evaluation coordinator provides assurance that the evaluation will be performed and that the information will be relevant. Remember that evaluation will require some time from everyone involved with the project in addition to the time of the person responsible for directing the evaluation. It is recommended that staff time be assigned for evaluation in order to encourage cooperation and coordination.

No matter how evaluation is approached, it is important to have an evaluation plan that relates directly to program objectives. You must incorporate evaluation in your planning in order to know what data you intend to collect before implementing the intervention strategies. Too many program planners fail to do this and find themselves at the end of the year writing a "patched-up" evaluation report, which usually raises more questions for the decision-maker than it answers!

Several additional suggestions are offered to assist in developing and making a good program evaluation. First, as you develop an evaluation plan also develop, explore and choose alternative evaluation strategies.

Second, the same good sense in terms of resources and constraints that applies to generating and selecting strategies must also be applied to evaluation. Of particular concern are the costs and how well the approach meets evaluation needs. Costs can be particularly prohibitive; evaluation costs should be included as an essential item in the budget preparation of any program. It is difficult to suggest dollar amounts and/or percentages of the total cost of the program that should be allocated for evaluation purposes. However, reports from directors of a number of vocational education research and demonstration projects suggest that evaluation budgets often range from four percent to ten percent of the total project cost.

Another important criterion for selecting a method of evaluation is how well the method meets the evaluation needs *and* what kinds of unanticipated consequences the method might have. For example, data collection that is overly burdensome on staff may create feelings of resentment and lead to lack of acceptance of the evaluation findings. Fortunately, many evaluation approaches have positive by-products that can be used to the advantage of the program. People naturally like to know about their successes. Evaluation often identifies factors contributing to success which no one expected had very much importance when the program was operating.

Another concern in program evaluation is the development and maintenance of information. All information must be treated with discretion, not only because of the legal stipulations of the privacy and open records law, but also because indiscriminate use and/or indiscrete release of information can have damaging effects on the vocational program and efforts to improve accessibility. It is suggested that one set up a data file with procedures for information access to deal with this issue. Among the possible items to consider in creating a data file are:

1. **Location:** Locate all records centrally within the school for that particular school year, and

in a central respository for past years;

2. User Assistance: Provide technical assistance to data file users; e.g., translate technical language into "plain English" for parents;

3. Access: Follow all due process and information release guidelines of your State Education Agency;

4. Number: Create two sets of files—one for each individual student and one for aggregated data; e.g., by grade level and/or handicapping condition;

5. File Organization: Organize information according to goals; within each goal, organize information according to objectives; within each objective, organization information according to strategies;

6. File References: Establish a set of easy-reference baseline data which can be retrieved for quick comparisons;

7. Type of Data: Collect, process and store *process* evaluation data systematically so that applicable portions of it can be combined, with little effort, into data for *product* evaluation; and,

8. User News: Provide information updates to staff who need to know what information is available, how to access it and how to use the data.

EXAMPLES FOR CONSIDERATION

Tigris School District. As you will recall, David Williams and the Tigris School District LPC selected the strategy of a resource teacher program to provide support to teachers serving handicapped students in regular vocational education classes. In planning strategy implementation for barrier removal, Williams chose to use PERT to project time, resource and responsibility needs. This technique permitted Williams to schedule personnel interviews, identify program participants, clarify roles and responsibilities and order resource room equipment. He developed the plan in conjunction with the school staff on the LPC and reviewed the plan with the entire LPC when the PERT was complete. He programmed evaluations into the PERT using records on students served, e.g., grade reports, percent of time in regular vocational education programs, attendance data, and so on. He then constructed his Barrier Removal Schedule and implemented the strategy. The resource teacher program was initiated at the beginning of the next school year.

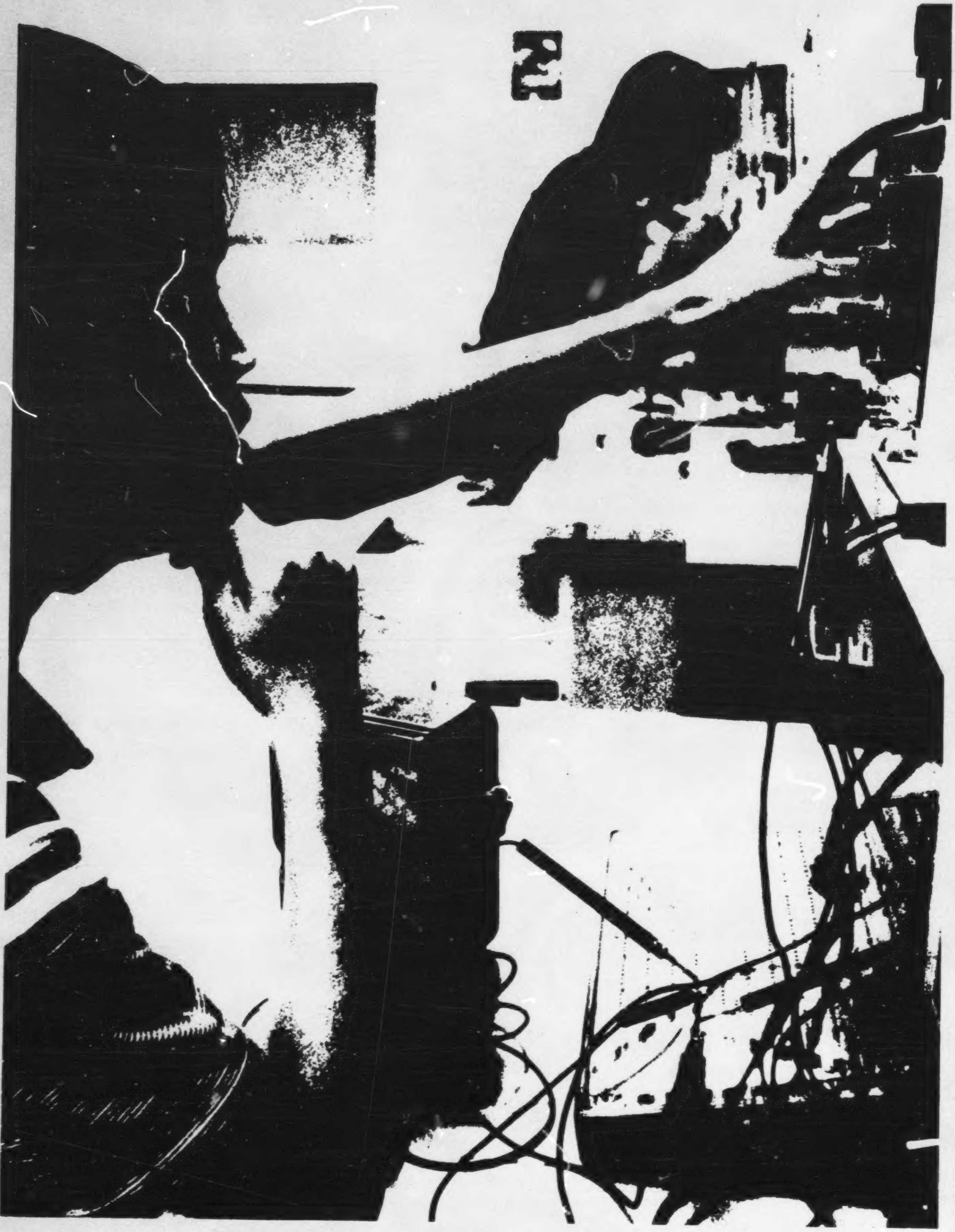
Euphrates Community College. As you remember, the strategy selected at ECC was assessment of the reading level and math prerequisites in vocational offerings. In considering implementation of the strategy, Hannah Markham decided to use the FFA technique with the college 504 Committee in order to identify forces and implications related to the strategy. She also anticipated that the use of FFA would generate additional support for and commitment to the strategy. She did not consider either PERT or MBO to be applicable to her particular situation.

The FFA took about two hours of time and produced a list of eight forces favoring implemenation of the strategy and four forces opposing the strategy. Under Markham's guidance, the 504 Committee then suggested ways of using the positive factors related to strategy implementation to mitigate or overcome the projected negative forces.

After the meeting, Markham developed her Barrier Removal Schedule by combining the product of the FFA with time and resource projections and statements of responsibility. The strategy was implemented during the Spring semester.

DIRECTIONS

Now that you have read about the considerations that one should make in planning for removing barriers, please check in the appropriate place on your Planning Record the names of the two procedures for planning for barrier removal you believe are most appropriate for your particular setting. Next, you should read in more detail about these two approaches in the booklet entitled, *Step 5: Removing Barriers.* Now turn to that booklet and read the two approaches that you have selected. When you have completed your reading, complete the other questions related to Step 5 and the Planning Record.



Appendix A.

PLANNING RECORD

DIRECTIONS: As you read the section on "Development of the Planning Record" in the *Guide*, beginning on page 18, supply the information requested in each of the following blocks. The Planning Record (PR) can be completed over a series of weeks. It is the first product of the planning process and contains information on which you will base future decisions and activities.

I. General Information

Education Unit: ____________

Person Responsible for PR: ____________

Date Begun: ____________

Date Completed: ____________

II. Preliminary Decision

Lapsed time ____________ Date started ____________ Finished ____________

Description of scope: ____________

____

____

Description of Resources: ____________

____

____

Description of Target: ____________

____

Persons Involved in Making Decisions: ____________

____

____

III. Prospective Membership on Local Planning Committee

Lapsed time ____________

Date Started ____________ Finished ____________

Job Title	Individual	Phase	Date Contacted	Outcome of Contact	Date of Confirmation Letter
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					

Lapsed Time ____________

IV. Background Data

Date Started ____________ Finished ____________

Federal and state legislation, rules and regulations as they affect your planning effort:

____

____

Local policy concerning provision of services and accessibility:

____

____

Local community services and resources:

1.	7.
2.	8.
3.	9.
4.	10.
5.	11.
6.	12.

Educational services currently provided to handicapped students:

1.	7.
2.	8.
3.	9.
4.	10.
5.	11.
6.	12.

Lapsed time ____________

V. Identifying Barriers

Date Started ____________ Finished ____________

Rank in order of importance the two most appropriate barrier identification techniques.

1. ______________________________ 2. ______________________________

After reading the selections in the *Step 1* booklet, which technique will you use? ____________________

Reason for selection? ____

When do you anticipate using the procedure? From ____________________ to ____________________

Consider the following factors in your thinking about identifying barriers. As you make decisions about each factor, please enter the information in the chart for Step 1. The factors are: 1) What tasks are necessary in technique you chose? 2) What time and resources are needed for each task as well as the total process? 3) Who is responsible for each task in the process? and 4) Who should be involved in each task of the process?

Chart Step 1: Identifying Barriers

Technique Selected:

	Tasks in Process	Resources Needed	Timing	Who is Responsible for Task?	Who Will be Involved in Task?
1.					
2.					
3.					
4.					
5.					
6.					
7.					

Lapsed time ____________

VI. Establishing Priorities and Goals

Date Started ____________ Finished ____________

Consider the following factors in your thinking about establishing priorities and goals. As you make decisions about each factor, please enter the information in the chart for Step 2. The factors are (1) What tasks are necessary in the technique? (2) What time and resources are needed for each task as well as the total process? (3) Who is responsible for each task in the process? and (4) Who should be involved in each task of the process?

Chart Step 2: Establishing Priorities and Goals

	Tasks in Process	Resources Needed	Timing	Who is Responsible for Task?	Who Will be Involved in Task?
1.					
2.					
3.					
4.					
5.					
6.					

Lapsed time ____________

VII. Generating Strategies

Date Started ____________ Finished ____________

Rank in order of importance the two most appropriate strategy generation techniques.

1. ____________________________ 2. ____________________________

After reading the selections in the *Step 3* booklet, which technique(s) will you use? ____________________

Reason for selection ____

When do you anticipate using the procedure? From ____________________ to ____________________

Consider the following factors in your thinking about generating strategies for removing barriers. As you make decisions about each factor, please enter the information in the chart for Step 3. The factors are (1) What tasks are necessary in the technique you chose? (2) What time and resources are needed for each task as well as the total process? (3) Who is responsible for each task in the process? and (4) Who should be involved in each task of the process?

Chart Step 3: Generating Strategies

Technique Selected:

	Tasks in Process	Resources Needed	Timing	Who is Responsible for Task?	Who Will be Involved with Task?
1.					
2.					
3.					
4.					
5.					
6.					
7.					

Lapsed time ____________

Date Started ____________ Finished ____________

VIII. Selecting Strategies

Which criteria do you expect you will use in selecting a strategy?

1. ____________ 2. ____________ 3. ____________

4. ____________ 5. ____________ 6. ____________

7. ____________ 8. ____________ 9. ____________

Rank in order of importance the two most appropriate strategy selection techniques.

1. ____________ 2. ____________

After reading the selections in the *Step 4* booklet, which technique will you use? ____________

Reason for selection ____________

When do you anticipate using this procedure? From ____________ to ____________

Consider the following factors in your thinking about selecting strategies for removing barriers. As you make decisions about each factor, please enter the information in the chart for Step 4. The factors are: (1) What tasks are necessary in the technique you chose? (2) What time and resources are needed for each task as well as the total process? (3) Who is responsible for each task in the process? and (4) Who should be involved in each task of the process?

Chart Step 4: Selecting Strategies

Technique Selected:

	Tasks in Process	Resources Needed	Timing	Who is Responsible for Task?	Who Will be Involved with Task?
1. 2. 3. 4. 5. 6. 7.					

Lapsed time ____________

IX. Removing Barriers Date Started ____________ Finished ____________

Rank in order of importance the two most appropriate techniques to use in your setting relative to planning for barrier removal.

1. ______________________________ 2. ______________________________

After reading the selections in the *Step 5* booklet, which technique will you use? ____________________

Reason for selection ____

During what time do you anticipate undertaking this step? From ______________ To ______________

Other questions related to the step for Removing Barriers are included in the Barrier Removal Chart, Appendix C of the *Guide*.

Appendix B.
DATA CHART

Step 1: Identifying Barriers

Time period of initiation: From ____________ To ______________

Major barriers identified:
1.
2.
3.
4.
5.
6.
7.
8.

Resources expended:

Time ________________ Dollars ________________ Other ________________

Step 2: Establishing Priorities

Time period of initiation: From ______________ To ________________

Priority listing of major barriers:
1.
2.
3.
4.
5.

Goals developed for major barriers:

1. Barrier
   Goal
2. Barrier
   Goal
3. Barrier
   Goal
4. Barrier
   Goal
5. Barrier
   Goal

Resources expended:

Time ________________ Dollars ________________ Other ________________

Step 3: Generating Strategies

Time period of initiation: From ____________________ To ____________________

Strategies generated:

1. Objective:
   Strategies 1.
   2.
   3.

2. Objective:
   Strategies 1.
   2.
   3.

3. Objective:
   Strategies 1.
   2.
   3.

4. Objective:
   Strategies 1.
   2.
   3.

5. Objective:
   Strategies 1.
   2.
   3.

Resources expended:

Time ____________________ Dollars ____________________ Other ____________________

Step 4: Selecting Strategies

Time period of initiation: From ____________________ To ____________________

Strategies Selected:

1. Objective:
   Strategy

2. Objective:
   Strategies

3. Objective:
   Strategy

4. Objective:
   Strategy

5. Objective:
   Strategy

Appendix C.

BARRIER REMOVAL SCHEDULE

Educational Unit: ____________________________________

Barrier: ____

Goal: ____

Objective: ______________________________________

Strategy: _______________________________________

Implementation
Objectives: 1. ________________________________

2. ________________________________

3. ________________________________

Action Steps For Implementation	Preceding Activity	Dates of Activity Start	End	Responsible Staff	Resource Needs	Personnel Involved	Expected Outcomes	Data Needs	Involvement of LPC	Relative Success
1.										
2.										
3.										
4.										
5.										
6.										
7.										

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Appendix D

(date) ____________________

Dear ______________ :

Thank you for agreeing to serve as a member of the Local Planning Committee (LPC) to work on making the (school) ____________________ vocational program more accessible for all students including those students with handicapping conditions. We will meet at (hour) ______ on (date) ______ at (place) ____________________ .

At the meeting we will (brief description) ____________________ .

Your contribution to this planning group will be most valuable to the students of our school and community.

(closing) ____________________

(name) ____________________

TB

References

Abroms, K. I., and T. L. Koders. Acceptance hierarchy of handicaps: validation of Kirk's statement, "Special education often begins where medicine stops." *Journal of Learning Disabilities*, 1979, 12 (1): 15-20.

Albright, L. *Administering Programs for Handicapped Students.* Arlington, Va.: American Vocational Association, 1979.

Alexander, C., and P. S. Strain. Review of educators' attitudes toward handicapped children and the concept of mainstreaming. *Psychology in the Schools*, 1978, 15 (3): 390-396.

Almond, P., S. Rodgers and D. Krug. Mainstreaming: A model for including elementary students in the severely handicapped classroom. *Teaching Exceptional Children*, 1979, 11 (4): 135-139.

Arends, R.I., and J.H. Arends. *Systems Change Strategies in Educational Settings.* New York: Human Science Press, 1977.

Ballard, M., L. Corman, J. Gottlieb and M. Kaufman. Improving the social status of mainstreamed retarded children. *Journal of Educational Psychology*, 1977, 69:605-611.

Berrie, P. J. Assessing instructional needs in your district. *Clearinghouse*, 1977, 50: 221-223.

Bond, R., and Weisgerber, R. *Mainstreaming the Handicapped in Vocational Education, Developing a Positive Attitude.* Palo Alto, California: American Institutes for Research in the Behavioral Sciences, 1977.

Bowe, F. *Handicapping America: Barriers to the Disabled Mentally Retarded.* New York: Harper & Row, 1978.

Bowser, S. E., and E. R. Roberson, Needs assessment: a study of vocationally related needs for secondary special education. *Educational Technology*, 1977, 17:43-46.

Brolin, D. E., and B. J. D'Alonzo. Critical issues in career education for handicapped students. *Exceptional Children*, 1979, 45(4):246-253.

Burello, L. C., L. Kaye and R. Nutter. Managing special education: developing an interdependent management system. *Journal of Special Education*, 1978, 12(2):105-111.

Cameren, R. J., et al. *Guidelines for Improvement of Vocational Programs and Resources to Serve Needs of Handicapped Students.* Englewood, Colorado: Performance Management Specialists, Inc., Final Report, 1977.

Clarcq, J. R., and E. A. Maruggi. Developing vocational training programs for handicapped students. *Educational Technology*, December, 1978, 30-33.

Clark, E. A. Teacher attitudes toward the integration of children with handicaps. *Education and Training of the Mentally Retarded*, 1976, 11(4):333-335.

Clore, G. L.. and K. M. Jeffrey. Emotive role playing, attitude change, and attraction toward a disabled person. *Journal of Personal and Social Psychology*, 1972, 23:106-111.

Cohen, S. Fostering positive attitudes toward the handicapped: a new curriculum. *Today's Children*, 1977, 6(6):7-12.

__________ Improving attitudes toward handicapped. *Educational Forum*, 1977, 42(1):9-20.

Cole, R.W., and R. Dunn. A new lease on life for education of handicapped. *Phi Delta Kappan*, 1977, 59(7):3-10, 22.

Comer, R. C., and J. Piliaun. As others see us: attitudes of physically handicapped and normals toward own and other groups. *Rehabilitation Literature*, 1975, 36(7):206-221.

Comptroller General of the United States. *Training Educators for the Handicapped: A Need to Redirect Federal Programs.* Washington, D.C.: U.S. General Accounting Office, 1976.

Dahl, P. R., J. A. Appleby and D. Lipe. *Mainstreaming Guidebook for Vocational Educators: Teaching the Handicapped.* Salt Lake City, Utah: Olympus Publishing Company, 1978.

Dixon, J. K. Coping with prejudice—attitudes of handicapped persons toward handicapped. *Journal of Chronic Diseases*, 1977, 30(5):307-322.

Donaldson, J., and M. Martinson. Modifying attitudes toward physically disabled persons. *Exceptional Children*, 1977, 43(6):337-341.

Duncan, W. J. *Decision Making and Social Issues.* Hinsdale, Ill.: Dryden Press, 1973.

Dwyer, W. A. Career development for deaf adults: Blue Hills breaks the communication barrier. *American Vocational Journal*, May 1973, 37-39.

Evans, J. H. Changing attitudes toward disabled persons: an experimental study. *Rehabilitation Counseling Bulletin*, 1976, 19(4):572-579.

Fein, R. L., and A. H. Ginsberg. Realistic literature about the handicapped: a review. *The Reading Teacher*, 1978, 31(7):802-804.

Fix, C., and J. Rohrbacher. What is a handicap? The impact of attitudes. *Personnel and Guidance Journal*, 1977, 56(3):176-178.

____________. Attitudes: the neglected barrier facing the handicapped. *Florida Vocational Journal*, 1978, 4(1):14-19.

Florida State Advisory Council on Vocational and Technical Education. *Accessibility of Buildings and Facilities to the Physically Disabled.* Tallahassee, Florida: State of Florida, Department of Education, 1977.

Gardner, G. *Social Surveys for Social Planners.* Sydney: Holt, Rinehart and Winston, 1976.

Glazzard, P. Simulation of handicaps as a teaching strategy of preservice and inservice training. *Teaching Exceptional Children*, 1979, 11(3):101-104.

Golin, A. K. Stimulus variables in measurement of attitudes toward disability. *Rehabilitation Counseling Bulletin*, September 1970, 20-27.

Gollay, E. and J. F. Doucette. How to deal with barriers in schools.*School Shop*, 1978, 37(8):86-89.

Gottlieb, J., and L. Corman. Public attitudes toward mentally retarded children. *American Journal of Mental Deficiency*, 1975, 80(1):72-80.

Gottlieb, J., M. I. Semmel and D. J. Veldman. Correlates of social status among mainstreamed mentally retarded children. *Journal of Educational Psychology*, 1978, 70(3):396-405.

Halloran, W. D. Handicapped persons: who are they? *American Vocational Journal*, 1978, 53(1):30-31.

Hagedorn, H. J., K. J. Beck, S. F. Neubert and S. H. Werlin. *A Working Manual of Simple Program Eval. Techniques for Community Mental Health Service Centers.* (Prepared by Arthur D. Little, Inc., Cambridge, Mass. for NIMH) DHEW (Adm.) 76-404, 1976.

Hanson, E. M., and E. M. Brown. A contingency view of problem solving in schools: a case analysis. *Educational Administrator Quarterly*, 1977, 71-91.

Harasymiu, J., and M. D. Horne. Teacher attitudes toward handicapped children and regular class integration. *Journal of Special Education*, 1976, 10(4):393-399.

Havelock, R. G. *Planning for Innovation.* Ann Arbor, Michigan: Institute for Social Research, 1969.

Hersch, A., *et al.* Normalized interaction with families of the mentally retarded—to introduce attitude and behavioral change in students in a professional discipline. *Mental Retardation*, 1977, 15(1):32-33.

Higgs, R. W. Attitude formation—contact or information? *Exceptional Children*, 1975, 41(3):496-497.

Holstrop, R. W. *Managing Education for Results.* Homewood, Ill.: E-C Publishing Company, 1975.

Holt, K. S. Some key points in planning services for handicapped children. *Child Care Health and Development*, 1976, 2(6):387-394.

Hughes, J. H. *Mainstreaming the Handicapped in Preparatory Occupational Education Programs in North Carolina*. Chapel Hill, N.C.: System Sciences, Inc., 1978.

Hull, M. E. *Vocational Education for the Handicapped: A Review of Information Series #119*. Columbus, Ohio: National Center for Research in Vocational Education, 1978.

Jones, R. L. The hierarchial structure of attitudes toward the exceptional. *Exceptional Children*, 1974, 40:430-435.

Jordan, J. B. *Exceptional Students in Secondary Schools*. Reston, Va.: The Council for Exceptional Children, 1978.

Katz, S., and E. Shurka. The influence of conceptual variables on evaluation of physically disabled and nondisabled. *Rehabilitation Literature*, 1977, 38(11-12): 369-373.

Kaufman, R. A. *Educational System Planning*. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1972.

Kennon, A., and J. Sandoval. Teacher attitudes toward the educable mentally retarded. *Education and Training of the Mentally Retarded*, 1978, 13(2): 139-145.

Levitan, S. A. and R. Taggard. Jobs For The Disabled. Baltimore, Md.: The Johns Hopkins Un. Press; 1977.

MacMillan, D. L., C. E. Meyers and R. K. Yoshida. Regular classroom teachers' perceptions of transitional programs for EMR students and their impact on students. *Psychology in the Schools*, 1978, 15(1):99-103.

Mandell, C. J., and P. S. Strain. Analysis of factors related to attitudes of regular classroom teachers toward mainstreaming mildly handicapped children. *Contemporary Educational Psychology*, 1978, 3(2):55-71.

Marrs, L. W., and D. I. Helge. The role of needs assessment in program planning and evaluation. *Journal of Special Education*, 1978, 12(2):144-153.

Martin, E. Some thoughts on mainstreaming. *Exceptional Children*, 1974, 41: 150-153.

Martin, E. New public priority: education of handicapped children. *Compact*, August 1971, 4-7.

McCarthy, R., and R. A. Stodden. Mainstreaming secondary students: a peer tutoring model. *Teaching Exceptional Children*, 1979, 11(4):162-163.

McGaughey, R. From problem to solution: the new focus in fighting environmental barriers for the handicapped. *Rehabilitation Literature*, 1976, 37(1):10-12.

McGrath, J. H. Relevance trees. In *Futurism in Education*, Stephen P. Hencley and James P. Yates (eds.). Berkeley, California, 1974.

Meers, G. D. *Development and implementation of program models for assisting vocational teachers in dealing with the educationally disadvantaged, handicapped, and minorities*. Lincoln, Nebraska: University of Nebraska-Lincoln, 1977.

Miller, F. T. Need identification and program planning in the communication context, Chapter 9 in *Evaluation of Human Service Programs*. Attkisson, Hargreaves and Horowitz (eds.). New York: Academic Press, 1976.

Milner, M. Planning for accessibility: a guide to developing and implementing campus transition. *Rehabilitation Literature*, 1977, 38(11-12):376-378.

Morgan, M. Beyond disability: a broader definition of architectural barriers. *A.I.A. Journal*, 1976, 65(5):50-53.

National Advisory Committee on the Handicapped. *The Unfinished Revolution: Education of the Handicapped, 1976 Annual Report*. Washington, D. C.: Department of Health, Education and Welfare.

Orlansky, M. D. Active learning and student attitudes toward exceptional children. *Exceptional Children*, 1977, 46(1):49-52.

Panda, K., and W. Bartel. Teacher perception of exceptional children. *Journal of Special Education*, 1972, 6:261-266.

Pappanikou, A. J. Mainstreaming. *Teacher Education and Special Education*, 1979, 2(3):51-58.

Park, L. D. Barriers to normality for the handicapped adult in the U. S. *Rehabilitation Literature*, 1975, 36(4):108-111.

Paul, J. L., A. P. Turnbull and W. M. Cruickshank, *Mainstreaming: A Practical Guide.* Syracuse, N. Y.: Syracuse University Press, 1977.

Phelps, L. A., and W. D.Halloran. Assurance for handicapped learners. *American Vocational Journal,* November 1976, 36-37.

Phelps, L. A., and T. L. Wentling. A proposed system for identification, assessment and evaluation of special needs learners, *Journal of Industrial Teacher Education,* Spring 1977, 14.

Phillips, L. *Barriers and Bridges.* L. Carmel and R. Renzullo (eds.). Sacramento, California: California Advisory Council on Vocational Education, 1977.

President's Committee on Employment of the Handicapped. *A Handbook on the Legal Rights of Handicapped People.* Washington, D. C., 1978.

President's Committee on Employment of the Handicapped, Washington, D. C. *Pathways to Employment.* Recommendations made at meeting of President's Committee on Employment of the Handicapped, Washington, D.C., November 22-23, 1976.

Proctor, D. I. An investigation of the relationships between knowledge of exceptional children, kind and amount of experience and attitudes toward classroom integration. Doctoral Dissertation, Michigan State University, 1967. *Dissertation Abstracts,* 1967. 28:1721-A.

Prothero, J., and W. Ehlers. Social work students' attitude and knowledge changes following study of programmed materials. *American Journal of Mental Deficiency,* 1974, 79(1):83-86.

Rapier, J., R. Adelson, R. Carey and K. Croke. Changes in children's attitude toward physically handicapped. *Exceptional Children,* 1972, 39:219-223.

Razeghi, J. A., and S. Davis. Federal mandates for the handicapped vocational education opportunities and employment. *Exceptional Children,* 1979, 45(5): 353-359.

Reeder, C. W., and D. C. Linkowski. Institutional, attitudinal, legal and leisure barriers to disabled. *Rehabilitation Counseling Bulletin,* 1976, 20(1):76-79.

Revis, J. S., and B. D. Revis. Transportation and disability: an overview of problems and prospects. *Rehabilitation Literature,* 1978, 39(6-7):120-179.

Reynolds, M. C. (ed.) *National Technical Assistance Systems in Special Education.* Report of the conference held in Washington, D. C., May 29-30, 1974.

Rumble, R. R. Vocational education for the handicapped. *Clearinghouse,* 1978, 53: 132-135.

Schipper, W. V., and L. A. Kenowitz. Educational futures—a forecast of events affecting the education of exceptional children: 1976-2000. *Journal of Special Education,* 1976, 10(4):401-413.

Schwartz, S. E. *Architectural Considerations for a Barrier Free Environment.* Gainesville, Florida: Florida University, College of Education; Washington, D. C.: Department of Health, Education and Welfare, Office of Education, 1977. (ED153048).

Severance, L., and L. Gasstrom. Effects of the label "mentally retarded" on the causal explanation of success and failure outcomes. *American Journal of Mental Deficiency,* 1977, 81(6):547-555.

Shotel, J. R., R. P. Iano and J. R. McGettigan. Teacher attitudes associated with the integration of handicapped children. *Exceptional Children,* 1972, 38:677-683.

Siegel, L. M., C. C. Attkisson and A. H. Cohn. Mental health needs assessment: strategies and techniques. In *Resource Materials for Community Mental Health Program Evaluation: Vol. II—Needs Assessment and Planning,* M. H. Hargreaves and J. E. Sorensen (eds.). National Institute of Mental Health Evaluation Study Reports Accession #PB-249-044. Springfield, Va.: National Technical Information Service, 1975.

Simpson, R. Modification of attitudes of regular class children towards the handicapped for purposes of achieving integration. *Contemporary Educational Psychology,* 1976, 1(1):46-51.

Thoms, D. F. From needs assessment to implementation: a planning and action guide. *Educational Technology,* July 1978, 5-9.

U. S. Congress. *Education Amendments of 1976.* P.L. 94-482. Washington, D.C.: U.S. Government Printing Office, 1976.

U.S. Congress. *Education for All Handicapped Children Act of 1975.* P.L. 94-142 Washington, D.C.: U.S. Government Printing Office, 1975.

U.S. Congress. *The Rehabilitation Act Amendments of 1974.* P.L. 93-480 Washington, D.C.: U.S. Government Printing Office, 1974.

U.S. Congress, *The Rehabilitation Act of 1973.* P.L. 93-112. Washington, D.C.: U.S. Government Printing Office, 1973.

U.S. Congress. *The Architectural Barriers Act of 1968.* P.L. 90-480. Washington, D.C. U.S. Government Printing Office, 1968.

U.S. Department of Health, Education and Welfare. *Federal Register.* Washington, D.C.: U. S. Government Printing Office, Vol. 42, No. 163, August 23, 1977.

U.S. Department of Health, Education and Welfare. *Federal Register.* Washington, D.C.: U.S. Government Printing Office, Vol. 44, No. 56, March 21, 1979.

U.S. Department of Health, Education and Welfare, Office for Civil Rights. *Civil Rights, Handicapped Persons, and Education: Section 504 Self-Evaluation Guide for Pre-School, Elementary, Secondary, and Adult Education.* Washington, D.C., 1978.

U.S. Department of Health, Education and Welfare. *The Condition of Education.* Washington, D.C.: U.S. Government Printing Office; 1978.

Vincent, R. J. An alternative approach to measuring attitude change. *Health Education,* 1978, 9(6):22-23.

Weatherly, R., and M. Lipsky. Street level bureaucrats and institutional innovation: implementing special education reforms. *Harvard Educational Review,* 1977, 47(2):171-197.

Weintraub, F. J., A. Abeson, J. Ballard and M. L. LaVor. *Public Policy and the Education of Handicapped Children.* Reston Va.: The Council for Exceptional Children, 1977.

Wentling, T. L. Teaching students with special needs. *Industrial Education, May/June 1978, 29-32.*

White House Conference on Handicapped Individuals, *Volume One, Awareness Papers.* Washington, D.C.: U. S. Government Printing Office, 1977.

Williams, R. T. *A model for identifying community education needs.* University of Wisconsin, unpublished paper, April 1978.

Yuker, H. E., J. R. Block and J. H. Young.*The measurement of attitudes toward disabled persons.* Albertson, N.Y.: INA Mend Institute of the Human Resources Center, 1970.